DRAFT ENVIRONMENTAL IMPACT STATEMENT
ON
IMPROVING THE REGULATORY PROCESS IN SOUTHWEST FLORIDA
LEE and COLLIER COUNTIES, FLORIDA

JULY 1999

PREPARED BY

U.S. ARMY CORPS OF ENGINEERS

JACKSONVILLE DISTRICT

LEAD AGENCY

U.S. FISH AND WILDLIFE SERVICE

U.S. ENVIRONMENTAL PROTECTION AGENCY

COOPERATING AGENCIES

The study area consists of nearly one million acres comprising much of Lee and Collier Counties. This area is experiencing rapid growth and development. A number of valuable resources occur in the area including protected species, other fish and wildlife, wetlands, preserves, refuges, water supply, flood plain, shoreline, and other natural resources. Pressure for development has resulted in requests for permits from the U.S. Army Corps of Engineers to fill a substantial amount of wetlands in the study area. Based on data and maps from a Geographic Information System (GIS), the work of an Alternatives Development Group (ADG), water quality modeling, and other sources; we evaluated a number of predicted futures for the study area. The ADG consisted of a diverse group of stakeholders including proponents of development, agriculture, and conservation. Also represented were governmental officials at the Federal, state, and local level. The ADG met a number of times over a five-month period under the guidance of a professional and neutral facilitator. The ADG focused their efforts on developing alternatives and evaluating their effect. While the predicted futures were realistic possibilities, they varied from the more environmental friendly to pro development with minimum consideration of many environmental resources. This Environmental Impact Statement (EIS) examines five possible futures derived from the efforts of the ADG. This EIS discloses the criteria that if applied, would result in the different futures. In addition, it discusses the authorities of various regulatory agencies to affect the future. This EIS does not evaluate any specific permit action. This EIS does not change any regulation or policy. However, the information developed will enable the Corps (and other agencies) to better evaluate the cumulative impacts of future permit decisions in the study area. The EIS discloses several sets of questions which would be asked during the evaluation of a permit application to help evaluate cumulative impacts. Our goal is to make more efficient, timely, and appropriate permit decisions while balancing the demands of growth and development with protection of the environment.

For more information, contact Kenneth R. Dugger, U.S. Army Corps of Engineers, Planning Division, P.O. Box 4970, Jacksonville, Florida 32232-0019, phone (904) 232-1686 or facsimile 232-3442. You can also visit our web site at http://www.saj.usace.army.mil/permit/swfeis/contents.htm. Additional comments must be received in writing by August 23,1999.

US Army Corps of Engineers®
Jacksonville District

SUMMARY

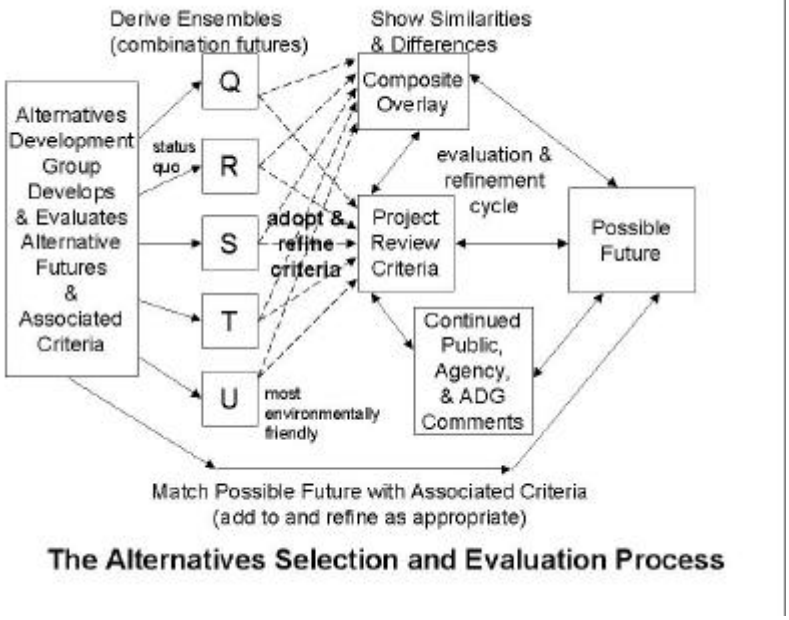
DRAFT ENVIRONMENTAL IMPACT STATEMENT
On
Improving the Regulatory Process in
Southwest Florida
Lee and Collier Counties, Florida

Need or Opportunity The study area consists of a large portion of Lee and Collier Counties located in the southwestern portion of Florida. This area has experienced a rapid rate of growth. The area also contains a number of important resources including protected species, wetlands, marine and estuarine resources, habitat preserves, sanctuaries, other public and private conservation lands, and other important ecological resources. The rapid development of the area has an impact on these ecological resources as well as water quality, air quality, housing, agriculture, tourism, industry, and the local economy in general.

The U.S. Army Corps of Engineers, Jacksonville District (Corps), has received or expects to receive applications for permits to fill wetlands and to impact other waters of the United States in the study area. The number of acres of wetlands that would be impacted would be a substantial portion of the national total resulting from permit actions by the Corps of Engineers. The Corps must consider a number of public interest factors and comply with a number of Federal and State requirements in association with any permit action. Independent of the Corps' permit process, there are a number of Federal and State environmental requirements which also affect water quality, air quality, land use, protected species, etc. These are largely beyond the control of the Corps.

The EIS is being drafted to support future Corps' decisions on whether or not to issue Department of the Army Permits (Permit). As provided by the Clean Water Act of 1972, a person must apply for and be issued a Permit prior to placing fill in wetlands or other Waters of the United States. The EIS was initiated out of concern that the Corps' incremental (permit-by-permit) review may not be adequately addressing the cumulative (total) effects. To identify the total effects, the Corps must predict the total set of applications that will be submitted.

Major Findings and Conclusions This EIS discloses a set of predicted futures based on assumptions (or criteria) about future land use in the study area. The impacts of these futures on various environmental and socio-economic factors are explored (see diagram illustrating the process for alternative selection and evaluation). The foundation of this effort was accomplished by a diverse group of stakeholders (the Alternatives Development Group). The Alternatives Development Group (ADG) consists of representatives from local, State, and Federal governments; environmental groups; and business interest. This effort was further refined by the Corps with input from other agencies, groups, and the general public. Substantial input on protected species and other fish and wildlife resources was provided by the U.S. Fish and Wildlife Service. Substantial input on water quality was provided by the U.S. Environmental Protection Agency. The interaction of future land use with environmental requirements (especially the requirements of the Endangered Species Act and the Clean Water Act) are heavily considered in postulating the alternative futures.



The Alternatives Selection and Evaluation Process

Identifying cumulative effects (Evaluation Factors). All of the land use/cover futures (referred to as Ensembles) predict that suburban development will continue, but they differ in how much more. Approximately 20% of the study area is currently urban or suburban development (included in this 20% are "vacant" lots and lands with roads). The five Ensembles predict that the future extent of development will range from 31% to 41% of the study area. This increase in area of development will occur as a result of a combination of: (1) filling wetlands (which requires a Corps permit); (2) clearing of non-wetland native vegetation; and (3) conversion of farmland. The Ensembles predict that from 5.5% to 6.6% of all the wetlands in the study area will be filled. The Ensembles report the predicted effects on a number of other factors as well (see **Table 3** in the EIS).

Using available information (Best Professional Judgement) The level of detail of the analysis corresponds to the size of the study area. The maps cover approximately 1,500 square miles and areas of urban, agriculture, and preservation were drawn literally using felt tips. The purpose of the maps is to describe broad concepts, for example, wildlife habitat corridors. The maps are not detailed delineation of parcel boundaries but are general locations of different land cover types. The group was asked to identify issues, the factors that influence those issues, and to create and evaluate how different configurations of land cover types would affect those issues. The participants used their expertise to identify which of the differences between the maps had the greatest influence on a particular set of issues. The Corps, in its permit application reviews, relies on this same use of "best professional judgement" and does not require applicants to develop elaborate economic or other logistics models.

Taking Stock (New Information) Currently, the Corps' evaluation of cumulative effects of an individual application is based on the issues identified by the Corps' project manager and concerns raised by the public or other agencies. This EIS provides new information. First, it provides a prediction of the total effect for twenty years of applications and other actions. Therefore, the effect of the individual application can now be compared to the total predicted effect. Second, it provides a comprehensive list of issues. Therefore, the Corps' project manager can ensure all appropriate issues are addressed in the evaluation of an individual application. Third, it provides a list of factors to evaluate the cumulative effect. Therefore, the Corps project manager can ensure the evaluations are consistent between individual applications.

Alternatives Rather than looking at alternatives for any particular permit action by the Corps, this EIS looks at various alternative futures for the study area. Based on how a particular permit action fits into the predicted future, this EIS provides information that will be useful in making decisions and determining cumulative impacts of individual permit action alternatives (including permit issuance, denial, project modification, or other mitigation).

Predicting Impacts (Alternatives) A group of local citizens and agency representatives (the ADG), at the Corps request, created and evaluated several predictions ("alternatives"). One of the alternatives represents the *status quo* (not considering the information provided by this EIS). Other alternatives include ideas that the ADG collectively or individually felt might occur or would like to see occur. Since the Corps cannot control the type of applications that are submitted, the EIS will present these alternatives and the evaluations. This information will be used in the review future applications.

Relating to Local Planning (Comprehensive Plans) The Corps' authority is independent of Florida's Comprehensive Planning process; however, existing Comprehensive Plans make reference and defer to State and Federal wetland permitting. The Lee County Comprehensive Plan states "...the county will not undertake an independent review of the impacts to wetlands resulting from development of wetlands that is specifically authorized by a DEP or SFWMD dredge and fill permit or exemption." The Collier County Future Land Use Map includes an "Areas of Environmental Concern Overlay" and states "This overlay contains general representations for information purposes only; it does not constitute new development standards and has no regulatory effect." Collier County Land Development Code requires "...permits must be secured from State or Federal agencies prior to commencement of construction..." Comprehensive Plans designate land use. The Corps does not designate land use. Landowners are free to submit applications requesting authorization for any use. Landowners have submitted, and the Corps must accept, applications for permits that would fill wetlands for uses contrary to County Comprehensive Plans.

Presenting Futures (Ensembles) The EIS presents five predictions of what the study area will look like in approximately 20 years. Each prediction is called an "Ensemble" (assembled from predictions for the four sub-areas or "zooms"). The Ensembles are labeled "Q", "R", "S", "T", and "U". Each Ensemble consists of a map (showing location of development, preservation, agriculture, and other land cover types) and a variety of criteria that apply to activities within those land cover types. The ADG subdivided the study area into four pieces (called "Zoom A", "Zoom B" or "The Hub", "Zoom C", and "Zoom D") and created several alternatives for each. The ADG created a total of twenty-nine alternatives. Each Ensemble selects one alternative from Zoom A, one from Zoom B, one from Zoom C, and one from Zoom D so that the Ensemble covers the entire study area. Alternatives with similar characteristics were placed in the same Ensemble. For example, Ensemble R consists of the alternative in Zooms A that represents the Lee County Comprehensive Plan, the alternatives each from Zoom B, C, and D that represent the Lee County and Collier County Comprehensive Plans. The other Ensembles were assembled using alternatives that were similar to each other.

Comparing Visions (Overlay of Alternatives) The maps were overlaid to observe the similarities and differences in land cover/use among the different predicted futures (Ensembles). The various Ensembles propose the same future land cover type for 67% of the study area. In other words, the different Ensembles essentially share the same vision of the future landscape for 67% of the study area. Land cover/use types include items such as "urban" or "industrial" to indicate that the land cover will be commercial, retail, residential and other types of urban or suburban development. These areas of "development" identified in common for all the ensembles constitute 14% of the study area. For the remaining land cover/uses that were common to all the ensembles, it was found that "Lehigh Acres", "Golden Gate Estates" and "Rural" land cover types are similar for all futures on 8.8% of the study area, "agricultural" on 5.4%, and "preservation" on 38.8%. For 25% of the study area, one or more of the Ensembles map a location as "preservation" while other Ensembles map the same location as "development", "agriculture", etc. For the remaining 8% of the study area, each Ensemble maps different land cover types. While there is agreement among the various futures for 67% of the study area, different land cover/use is envisioned for 33% of the study area (25%+8%) by the various Ensembles.

Preferred Alternative(s) This EIS provides information on cumulative impacts which will be useful for future permit decisions. This EIS provides information that will help the Corps (and possibly other agencies) to better carry out their responsibilities. However, this EIS does not make a decision on any particular permit application. This EIS does not change any law, regulation, or policy of the Corps.

Reviewing Future Permit Applications (Permit Review Criteria) From the list of evaluation factors and the extent of the reported effects, the Corps has drafted a Permit Review Map (Map) and Permit Review Criteria (Criteria). The Map is based on the Overlay of Alternatives discussed above; some locations were designated "development", others "preservation", etc. The Criteria provides several lists of questions: if the proposed project located within a "preservation" location on the Map, the applicant will be asked the "preservation" list of questions; if the proposed project is in "development" the applicant will be asked a different set of questions; and so forth. The questions are designed to compare the project's contribution to the total predicted cumulative effect. The evaluation of the cumulative effect of an individual project will be recorded in the memoranda the Corps prepares for every individual permit decision. The Map does not designate the Corps permit decision. For example, if an application submitted proposes construction of a residential development and if the project site is shown as "preservation" on the Map, the Corps will still consider all the circumstances and design of the individual project prior to deciding whether to issue or deny a permit. The difference is that additional attention will be given to the application in order to answer the questions listed by the Criteria for "preservation." A draft is enclosed as Appendix G.

Issues Raised by the Public and Agencies A number of issues were identified by the Alternatives Development Group and others. These include the following: property rights; water management; water quality; ecosystem function; wildlife habitat; listed species; regulatory efficiency and effectiveness; economic sustainability; local land use policy; avoidance of wetland impacts; mitigation; cumulative/secondary impacts; restoration/retrofit; and public lands management/use.

Areas of Controversy Decisions on permit applications and implementation of various other laws to protect environmental resources may be in conflict with certain plans for development and other land use changes. In addition, the question has been raised as to how much restriction on use of private property is justified by the public benefit of environmental protection. As long as there are strong and diverse viewpoints on these issues there will be a degree of controversy.

Listening to Community Input (Comments) The Corps' decisions on applications to fill wetlands have impacts on other issues important to the community. The Corps hosted the Alternatives Development Group and is using the Environmental Impact Statement (EIS) process to obtain public input in order to improve its understanding of these issues and to "fit into" the Comprehensive Plans, particularly where the Counties have deferred to or referenced the Corps on wetlands. Comments on the content of this Draft of the EIS will be used to revise the Draft and prepare a Final EIS. The Corps will then prepare a Record of Decision describing and decisions resulting from the EIS.

Unresolved Issues This EIS does not result in a decision on any particular permit application. It does explore the cumulative impact of the Corps regulatory decisions and decisions by others for the study area and provide information useful in determining the cumulative impacts of individual permit decisions. Each permit application will continue to be addressed on a case-by-case basis in accordance with laws and regulations. Similarly, the areas of controversy will be addressed on a case-by-case basis in accordance with applicable laws and regulations. The Corps recognizes that this EIS represents just one step in the development of an appropriate analysis that can appropriately describe the many interrelationships of wildlife and other issues across the landscape. The Corps is committed to, after the publication of this Draft EIS, working with the U.S. Fish and Wildlife Service to develop more detailed analysis tools to be ultimately incorporated into the Corps' decision processes. For example, there are fairly specific guidelines for protection of bald eagle nests from construction and other activities in the vicinity of the nest. There is no similar document (with such specificity) for many of the other evaluation factors. Once the detailed analysis tools are available to be used in project development and design, then these can be applied not only to review of applications but also to a re-evaluation of the predicted total change in the landscape to the extent that adverse impacts to listed species cannot be avoided and if adverse effects as defined by the Endangered Species Act remain, formal consultation may become necessary.

Table 3. Summary of Direct and Indirect Impacts

Evaluation Factor.	Measurement.	Q	R	S	T	U	What influenced evaluation.	Conclusion/Comparison.
Avoidance of wetland impact.	Estimate of percent of total area of wetland that will be filled.	6.6%	7.0%	5.6%	5.8%	5.5%	How flexible is typical configuration of site design for the land use compared to distribution/shape of wetlands in the area that land use is mapped.	Ensemble with less impact better satisfy requirement for avoidance.
Loss of uplands adjacent to wetlands.	Portion of study area preserved for natural resource benefits.	38%	38%	42%	42%	43%	Existing preserves total 27%. Native vegetation (upland and wetland) occupy 58% of the study area.	Uplands outside of preserves have higher probability to be impacted.
Availability of compensatory mitigation.	Percent of total wetlands in study area that are within areas that are not now preserved but are proposed to be preserved ("new preserves").	17%	19%	22%	23%	24%	Typical compensation is to restore degraded wetlands and preserve in perpetuity.	Larger percentage provides greater selection of wetlands that could be restored.
Acreage ratio.	Acres of wetlands in "new preserves" divided by acres of wetlands that will be filled.	2.6:1	2.7:1	4.0:1	3.9:1	4.4:1	Some wetlands in "new preserves" will not be suitable for compensatory mitigation.	Larger ratio provides greater choice in lands to be acquired and restored.
Availability of replacement of wetland function.	Wetlands in "new preserves" were Converted to a scored high, medium, and low for their potential quantity of "units of restoration" and wetlands to be filled were Converted to a scored for the "units of impact". Ratio is the "units of restoration" divided by "units of impact".	1.8	1.8	2.8	2.8	3.3	Wetlands adjacent to existing development, canals, etc. Converted to a scored "low".	Higher ratio indicate greater assurance that ecosystmem benefits would be replaced.
Florida Panther	Percent of Priority 1 and 2 lands (within study are) ithin preserves.	56%	62%	70%	71%	72%	Existing public preserves with panther use.	Higher percentage on public lands provide greater assurance of preserving population.
Florida Panther	Percentage of lands in agriculture and whether criteria for non-intensification of use applied.	26%, No criteria	35%, No criteria	18%, Criteria	25%, Criteria	19%, Criteria	Low-intensity agriculture minimizes impacts to panther.	Greater area of low-intensity agriculture increases assuarance of conservation of the species.
Scrub Jay	Number of families within contiguous preserves.	6	6	11	8	6	26 known families within study area.	Higher number within contiguous preserves increase assurance of preservation of species.

Red cockaded woodpeckers.	Number of known clusters located within contiguous preserves.	10	2	13	12	18	40 known groups in study area. Existing sites in old growth pine.	Higher number of groups in preserves increases assurance of preservation of the species.
Bald Eagle.	Number of nests located within contiguous preserves.	18	18	20	19	18	74 known nests in study area. Concern also with adjacent lands.	Higher number of nests in contiguous preserve provides more assurance of preservation of the species.
Woodstork.	Number of rookeries within contiguous preserves.	11	9	12	11	14	14 known rookeries in study area. Also concerned with foraging area.	Higher number of rookeries in contiguous preserves provide more assurance of preservation of species.
Audubon's crested caracara.	Continuation of low intensity agriculture (compare to Panther) and preservation of seasonal wetlands (see Seasonal Wetlands).	140,000 acres agriculture, no criteria.	181,000 acres agriculture, no criteria.	97,000 acres agriculture w/ limited intensification.	130,000 acres agriculture, 54,000 with no intensification.	152,000 acres agriculture, some with limited intensification.	Study area fringe of 10 county area where population is found.	Greater areas of continuation of low intensity agriculture and greater area of preservation of seasonal wetlands better provide opportunities for population to expand.
Piping Plover	Affect on beaches directly or by water quality change.						Barrier beaches used as wintering sites.	No direct effect (fill) but could be affected by water quality. Increased coastal development degrades habitat.
Snail Kite	Preservation of seasonal wetlands.						Feed only on apple snails, only found in seasonal wetlands.	Greater number of seasonal wetlands within contiguous preserves increases probability of maintenance of species.
West Indian Manatee.	Coastal development and seagrass loss.						Boating mortality, loss of seagrass from prop dredging and decline in water quality.	Increased coastal development degrades habitat.
American Crocodile.	Changes in timing and quantity of freshwater (see Flowways factor).						Changes in freshwater flows affects plant and animal communities in estuarines.	Maintenance of flowways reduce potential changes in hydropatterns, increasing potential for preservation of the species. Increased coastal development degrades habitat.

American Alligator	Area of seasonal wetlands in preserves (see Seasonal Wetlands factor) and flowways (see Flowways factor).						Habitat is in large wetlands areas.	Preservation of wetlands within contiguous preserves continue the population of this species.
Eastern Indigo Snake.	Native Habitat							More fragmentation and reduction in habitat impacts species.
Sea Turtles (Loggerhead, Green, Hawksbill, and Kemp's Ridley)	Effect on beaches.						Effects include artificial lighting, beach renourishment, human presence, and exotic vegetation.	None directly affect beach. More coastal development degrades habitat.
Multi-Species Recovery Plan (MSRP)	BPJ assessment of how the alternative enhances implementation of the MSRP. Converted to a score from 4 (best) to 24.	17	23	6	13	9	Whether landuse/criteria included that explicitly supported the MSRP.	Those with mapping of preserves or, for all land types, criteria such as found in the MSRP enhanced its implementation.
Strategic Habitat Conservation Area (SHCA).	Percentage of the total area of SHCA in the study area that will be in preserve.	56%	56%	65%	69%	69%	8.2% of SHCA in State is within study area.	Lower percentage indicates greater reliance on habitat found on private land.
Wading Bird Rookeries.	Number rookeries found within contiguous preserves.	17	13	17	18	17	Not measured is effect on foraging range up to 15 kilometers (30 kilometers for Woodstorks). Total 25 sites.	Higher number of rookeries and foraging range in preserves provide more assurance of preservation of species.
Seasonal wetlands.	Percent of total area that will be found within contiguous preserves.	70%	73%	76%	75%	86%	Seasonal wetlands not evenly distributed across landscape.	
Connectivity provided between major habitat areas.	BPJ assessment of number of connections explicitly provided. Converted to a score 4 (best) to 24.	21	18	6	10	8	Wider the connection Converted to a scored lower (better).	Wider and more numerous connections are more immune to disturbance from adjoining land uses.
Flowways.	Similar to Connectivity, since most connections follow natural flowways. Converted to a score 4 (best) to 24.	18	23	5	6	8	Routing flows through contiguous natural areas Converted to a scored lower (better).	Wider flowways of natural vegetation preserved ability to store floodwaters and prevent downstream pulse flows.
Regional significant natural resources. Plans and goals of the Southwest Florida Regional Planning Council.	Assessment of how enhanced the implementation of plans and goals. Converted to a score 4 (best) to 24.	20	17	4	6	7	Comparison of mapping or criteria to the goals.	Explicit inclusion of maps or criteria better support the goals.

High priority wetlands important to wetland dependent species.	Percentage of wetlands and uplands that would be within contiguous preserves.	79% wetland / 37% upland	79% wetland / 38% upland	82% wetland / 46% upland	86% wetland / 77% upland	87% wetland / 49% upland	37% of study area is important wetland and 19% of study area is important upland.	Percentages of upland lower than wetland indicate greater imbalance in mix of plant communities.
Shoreline.	Assessment how enhances or degrades fringe's ability to provide aquatic nursery and foraging habitat. Converted to a score 4 (best) to 24.	20	21	7	7	8	Reduction in area of mangrove, saltmarsh, or, behind the fringe, pineland and hardwood hammock plant communities.	No direct affect of mangrove or salt marsh, but higher Converted to a scores reflect development behind the fringe.
Historic Properties.	Not.						Site specific.	Addressed in specific application.
Property Rights.	Assessment of reduction in rights. Converted to a score 48 (least effect) to 0 (greatest reduction).	45	47	18	21	12	Affect on fair market value of property, reasonable expectation for use of land and return on investment, and vested rights.	
Difference from Comprehensive Plans.	Assessment of significance of difference. Converted to a score 16 (most agreement) to 0 (greatest difference).	14	16	7	7	5	Additional criteria or restrictions lowered Converted to a score.	Large difference between Ensembles.
Economic Sustainability: Job Creation	Assessment on creation or elimination of jobs. Converted to a score 16 (positive influence) to 0 (less protective of economic sustainability)	13	13	6	5	4	One influcence is restrictions on intensification of agriculture prevents year round jobs from citrus.	Restrictions on area or type of land use restrict opportunity for job creation.
Economic Sustainability: Home affordability.	Assessment of change in cost of homes. Converted to a score 16 (positive influence) to 0 (less protective of economic sustainability).	11	11	6	6	4	One is restrictions on density (number of homes per acre).	More restrictions increases cost per unit of homes.
Economic Sustainability: Cost of living.	Assessment of change in costs. Converted to a score 16 (positive influence) to 0 (less protective of economic sustainability).	10	10	7	7	7	Restrictions add to costs. Costs passed to consumers.	More restrictive criteria increases cost of living.
Economic Sustainability: Property tax base.	Assessment of the area of development. Converted to a score 16 (positive influence) to 0 (less protective of economic sustainability).	13	14	7	6	5	Number of acres and type of land use.	Restrictions on use of land (intensification of agriculture) or area of development reduces tax base.

Economic Sustainability: Cost to implement.	Assessment of relative cost to acquire preserves and peform restoration. Converted to a score 16 (positive influence) to 0 (less protective of economic sustainability).	12	13	5	6	3	Area of proposed "new preserves".	Larger "new preserves" adds costs passed to local goods and services.
Economic Sustainability: Increased taxes.	"Cost to implement" divided by "Property Tax Base". Converted to a score 16 (positive influence) to 0 (less protective of economic sustainability).	12	13	6	6	4	Preserves must be supported by property tax base.	Higher area of preserves at same time as smaller area of development increases taxes.
Aesthetics.	Not.						Areas of contiguous preserve.	Many persons attracted to area for presence of natural areas.
Management of Public Lands.	Narrative assessement of effect on management.	Greatest area of development.	Greatest area of agriculture, preferable to urban land uses.	Increases area of preserve adjacent to public lands.	Less urban adjacent to Corkscrew Marsh.	More restrictive criteria.	Considered (1) compatability of the surrounding land use with the land management plans and (2) whether change in land use degrade or improve natural resources on public land.	Management least effected when public lands surrounded by low intensity activities and by expansion of contiguous preserves.
Water Quality: Pollution Loading	Assessment. Converted to a score 3/+ (least likely to affect water quality) to 15/0 (more likely an impact).	13/0	15/0	6/0	9/+	6/+	Type of land use and type of treatment of the runoff.	Reduction in area of urban or criteria to provide treatment reduced likelihood of impact.
Water Quality: Freshwater pulses.	Assessment. Converted to a score 3/+ (least likely to affect water quality) to 15/0 (more likely an impact).	12/0	13/0	7/0	6/+	6/+	Area of new impervious surface and acres of wetland preservation.	Increase in urban with decrease in wetland areas (that provide peak storage) increases pulses.
Water Quality: Habitat Loss	Assessment. Converted to a score 3/+ (least likely to affect water quality) to 15/0 (more likely an impact).	13/0	12/0	6/+	7/+	4/+	Quantity of wetlands.	Higher quantity of natural vegetation preserved maintains capability to assimilate pollutants.
Water Quality: Groundwater impact.	Assessment. Converted to a score 3/+ (least likely to affect water quality) to 15/0 (more likely an impact).	11/+	11/+	5/0	7/0	6/0	Protection of Surficial Aquifer System.	Protection of lands surrounding wellfields either by criteria or placing in preserve reduces likelihood of impact.

Hurricane Preparedness	Assessment.	Increase in urban area.					Increase in population offset by increase in roads and shelters.	None were considered to have change preparedness.
Water Management. (7 factors: infrasturcture, home damage, home construction, flood depth, historic flow patterns, water storage, and aquifier zoning.)	Assessment whether seven factors were "addressed", Converted to a scored a "+". Converted to a score is the number of +'s. Higher the Converted to a score, the less potential for impact.	6	14	17	13	14.5	Provision for funding infrastructure. Criteria to prevent home construction in floodplain. Preservation of flowways. Preservation of wetlands (store water and preserve groundwater levels).	R provides criteria for homes within floodplain and funds infrastructure. S, T, and U provide wetland preserves and flowways.
Cumulative impacts: Social factors. (4 factors: Infant mortality, Road needs, Crime rates, Hurricane vulnerability).	Assessment of the cumulative effect for each of the individual factors. Lower the Converted to a score, the less likely will be a degradation.	46	65	36	40	42	Area of urban development. For Hurricane vulnerability, presence of flowways.	Increase in urbanziation has cumulative impacts, but flooding from hurricane addressed by presence of flowways.
Cumulative Impacts: Environmental factors. (6 factors: Air pollution, Water pollution, Watershed indicators (vulnerability of watershed to degradation), Wetlands, Hydrology, and Quantity of preserve.).	Assessment of the cumulative effect for each of the individual factors. Lower the Converted to a score, the less likely will be a degradation.	104	113	72	69	71	Area of development and contiguous preserves. Presence of flowways.	Greater development increases of air and water pollution (and vulnerability of watershed) while increases in contiguous preserves reduces impacts to wetlands, hydrology, and preserves.

Permit Review Criteria DRAFT

Suggestions for changes to this draft and the use of these evaluation factors are welcomed.

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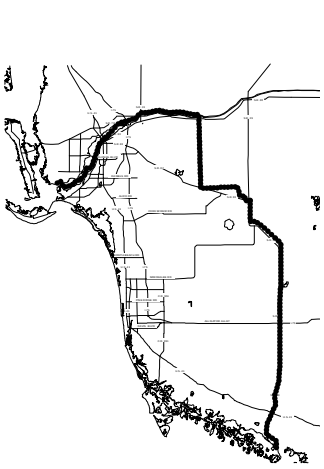
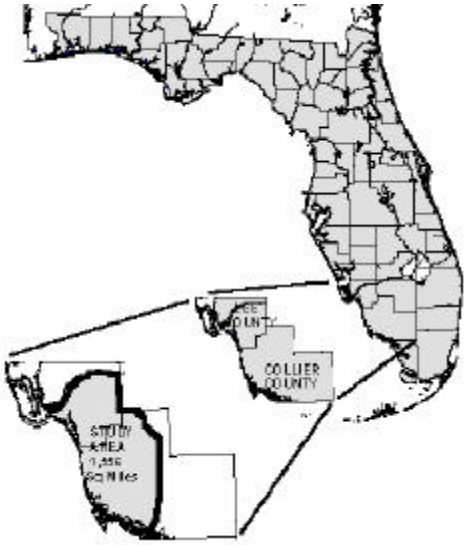
Figures.

Preamble.

This document will be used by Corps Project Managers to evaluate the direct and indirect (cumulative and secondary) effects related applications for Department of the Army Permits under Section 404 of the Clean Water Act. This document applies to the study area of the Environmental Impact Statement for Improving the Regulatory Process in Southwest Florida (EIS). The study area measures 1,556 square miles.





The Corps' decision whether to issue or deny a Permit is based on an evaluation and weighing of the effects (both impacts and benefits) of the proposed project on many factors, including wildlife, endangered species, and water quality. The decision will consider both the direct and immediate effects and the indirect (cumulative and secondary) effects of the proposal. The decision will consider all the circumstances and design of each individual project. The Corp's Project Manger will use this document to prepare the Environmental Assessment/Statement of Findings (EA/SOF) memorandum that supports each Corps decision to issue or deny a permit.

This document provides several lists of questions. Each list is keyed to the land cover types of the Permit Review Map (Map), figure 2. If the proposed project is located within a "preservation" location on the Map, the applicant will be asked the "preservation" list of questions; if the proposed project is in "development" the applicant will be asked a different set of questions; and so forth.

The Map is based on the alternatives developed during the preparation of the EIS. Each alternative presented a map and associated criteria that represents a prediction of the what the study area will look like in approximately 20 years. The alternatives were then overlaid to find which geographic locations were mapped with similar land cover types, figure 3. For example, the alternatives variously use legends such as "urban" or "industrial" to indicate which areas of the study area will be occupied by commercial, retail, residential and other types of urban or suburban development and, for 14% of the study area, the alternatives all mapped some form of "development". For 25% of the study area, one or more of the alternatives map a location as "preservation" and the remainder at "development", "agriculture", etc., shown grey in Figure 3. For the remaining 8% of the study area, each Ensemble maps different land cover types, left as white areas in Figure 3. The Map (Figure 2) "fills in" the grey and white areas.

Suggestions for changes to this draft and the use of these evaluation factors are welcomed.

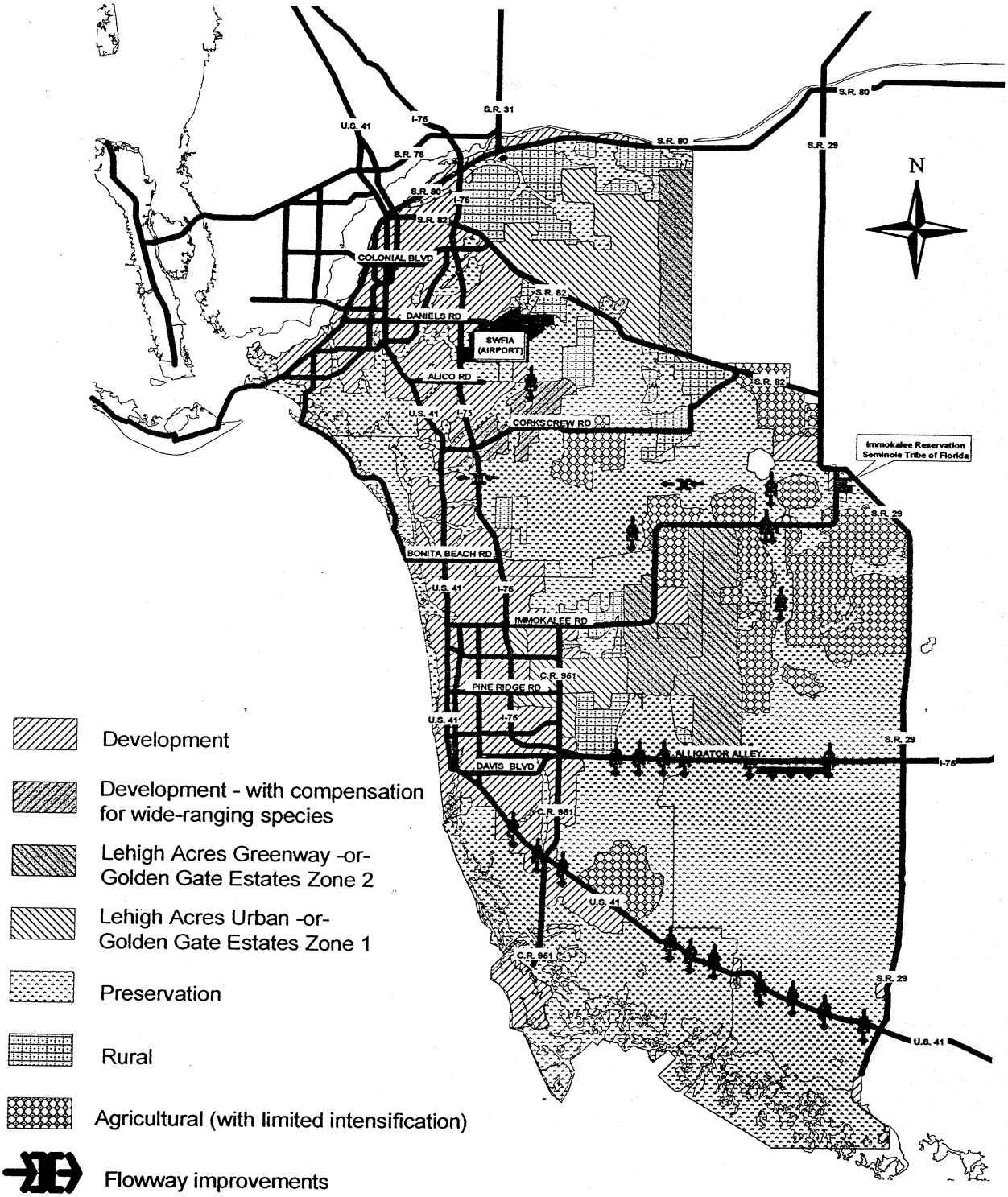


Figure 2. PROJECT REVIEW MAP

The Map does not predetermine the Corps permit decision. For example, if an application proposes construction of a residential development and if the project site is shown as "preservation" on the Map, the Corps will still consider all the circumstances and design of the individual project prior to deciding whether to issue or deny a permit. However, the nature of the questions demonstrates that the Corps intends to devote more attention to applications within the "preservation" area than to elsewhere.

Neither this document nor the Map applies to projects holding unexpired Department of the Army permits. This document only applies to applicants seeking authorization for placement of fill in Waters of the United States under Section 404 of the Clean Water Act.

The Map shows generalized land cover types. The information used to generate the Map reflects a synopsis of best available information. Boundaries between land cover types are not precise and no attempt was made to match parcel boundaries.

The document is subdivided by the land cover types (legends) on the Map. First, a general goal is stated for each legend. Then, questions are presented under four headings: I. Wetlands; II. Water quality and quantity; III. Habitat and listed species; and, IV. Other public interest factors. For most questions, suggestions are made for the statement(s) that would be placed in the EA/SOF. Parenthetical comments are provided that synopsize information found in the EIS.

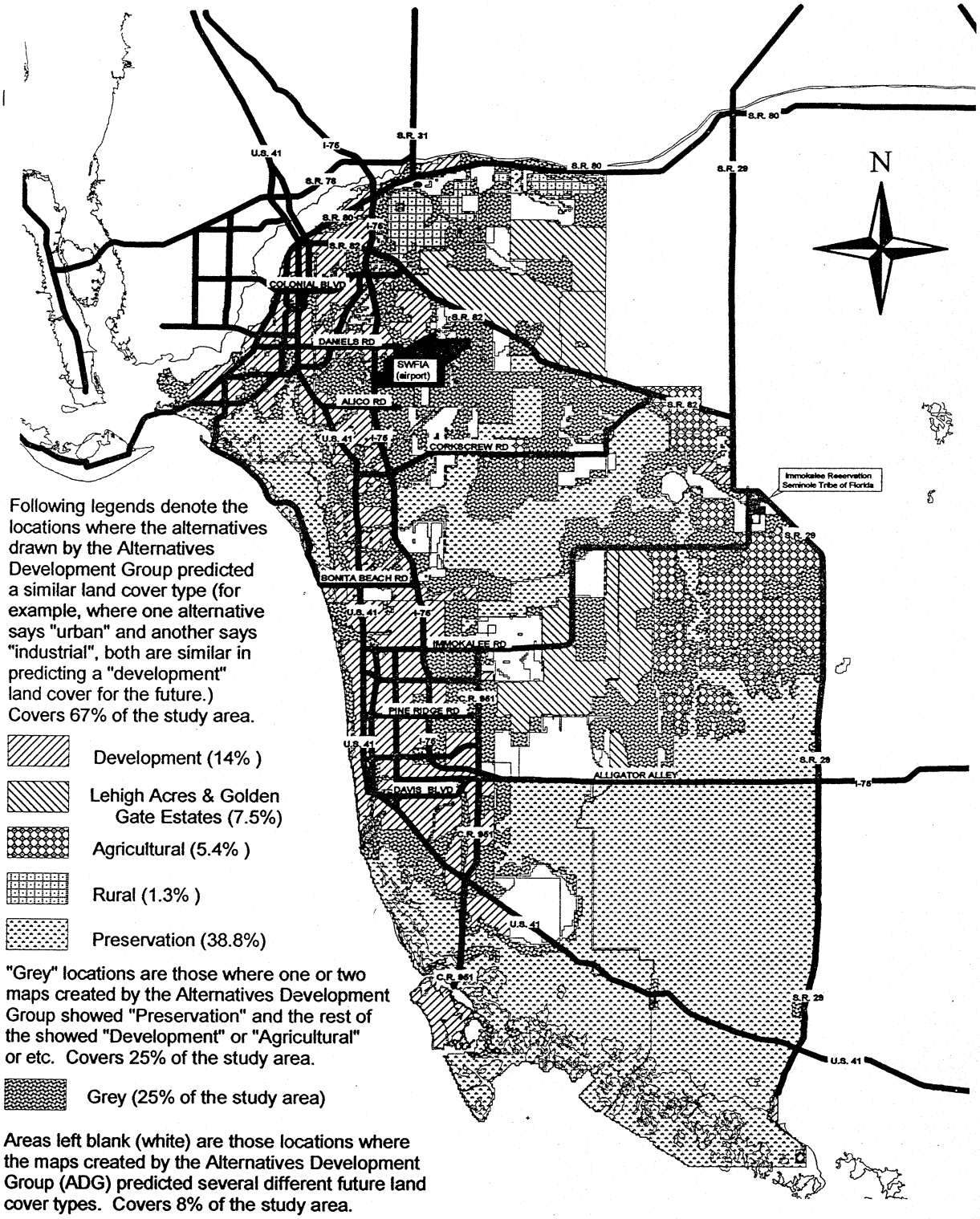
The Map provides one prediction (of many possible predictions) of the total effect of twenty years of activities. Some of the activities, but not all, require Corps permits. The questions and suggested statements are designed to: (1) compare the effect of the individual application to the total predicted cumulative effect; and (2) provide notice if the individual project will change the prediction.

The evaluation factors used to analyze the effects are not elaborate. Their purpose is to present the relationship of an individual permit to the whole. As these are used, the Corps will periodically evaluate, in cooperation with other agencies, the accumulation of permit decisions to evaluate trends. The Corps recognizes that the evaluation factors presented herein are just one step in the development of a more elaborate analysis to describe the many interrelationships of wildlife and other issues across the landscape. The Corps is committed to working with the U.S. Fish and Wildlife Agency and others to develop more detailed analysis tools to be ultimately incorporated into the Corps' decision processes.

Immokalee Reservation, Seminole Tribe of Florida.

The Immokalee Reservation is not assigned a legend. Therefore, there is no prepared list of questions or evaluation factors for reviewing the cumulative effects of projects proposed within the Immokalee Reservation. Corps Project Managers will continue to recognize the status, governmental authority, and powers of the Seminole Tribe of Florida and the rights under any tribal agreement with any agency of the U.S. Government.

Suggestions for changes to this draft and the use of these evaluation factors are welcomed.



Following legends denote the locations where the alternatives drawn by the Alternatives Development Group predicted a similar land cover type (for example, where one alternative says "urban" and another says "industrial", both are similar in predicting a "development" land cover for the future.) Covers 67% of the study area.

- Development (14%)
- Lehigh Acres & Golden Gate Estates (7.5%)
- Agricultural (5.4%)
- Rural (1.3%)
- Preservation (38.8%)

"Grey" locations are those where one or two maps created by the Alternatives Development Group showed "Preservation" and the rest of the showed "Development" or "Agricultural" or etc. Covers 25% of the study area.

- Grey (25% of the study area)

Areas left blank (white) are those locations where the maps created by the Alternatives Development Group (ADG) predicted several different future land cover types. Covers 8% of the study area.

Figure 3. OVERLAY OF ALTERNATIVES

Legend: Preservation.

Goal. The Preservation land cover legend shows lands that are set aside strictly for conservation purposes. These areas are primarily existing and proposed public lands to be managed for wetlands and wildlife protection, but include private lands that have been identified as having significant resource value. Many of these lands have been, or are desirable for, fee title purchase by government or private entities (such as mitigation banks) to protect critical wildlife and aquatic/wetland resources. In other cases, such entities have or may purchase conservation easements ensuring that such lands will be managed consistent with conservation goals.

Criteria.

I. Wetlands.

A. **If the proposed project is for a non-preservation purpose, can the proposed project be located within the areas mapped as development?** The answer must be supported by an extensive geographic and site alternatives analysis.

(Corps regulations, including the Section 404(b)(1) Guidelines, require an analysis that shows the proposed project is the least damaging practicable alternative. The analysis is performed in sequence: (1) demonstration that no other sites are available to avoid the wetland impact, or if available, have greater impact; (2) demonstration that the selected site and selected site plan has the minimum impact compared to other alternatives; and (3) compensation for the resulting unavoidable impacts is provided. Presumptions are: (1) water dependency; (2) upland impact is less damaging to the aquatic environment. The U.S. EPA may formally raise concerns with the alternative analysis by writing comment letters as provided by the 404q MOU. The Map shows a large area of vacant/natural land for non-preserve land cover types. The Corps will presume, unless rebutted/justified as impracticable, that sites for non-preserve activities are available outside of the areas mapped as preserve.)

Evaluation factors to be used.

Avoidance of Wetland Impact. **State whether the acres of proposed fill would contribute to a cumulative fill greater than 5.6% of the wetlands in the study area.**

(Section 4.2 estimates that, for the five Ensembles, from 5.5% to 7.0% of the wetlands in the study area will be filled. The lower percentage better satisfies the requirement for avoidance. The estimate for the Map is 5.6%. However, in the calculation of this estimate, a small amount of wetland fill (1%) was estimated to occur within areas shown as preservation. If a project proposes any fill, and certainly any fill greater than 1% of the wetlands on the site, consideration must be given that this may result in cumulative impact greater than 5.6%.)

Loss of buffers adjacent to wetlands. **State whether the area of the project footprint will reduce the quantity of native vegetation in contiguous preserves to some number less than 42% of the study area.**

(Section 4.2 estimates that existing preserves total 27% of the study area. Native vegetation occupies 58%. For the five Ensembles, areas mapped as preserve range from 38% to 43% of the study area. The estimate for the Map is 42%. Natural resource benefits result from a matrix of upland and wetland. This matrix is ideally provided in contiguous preserves. Buffers outside of contiguous preserves have a higher probability to be impacted. Preservation of of a wetland and buffer provide greater benefits to the aquatic ecosystem than preservation of wetlands alone.)

B. **For an application that proposes effects that are a large percentage of the cumulative numbers for any of the evaluation factors, should a project specific EIS be prepared to support the permit decision?**

C. **Does the proposed project preclude use, for compensatory mitigation, of a portion of the area mapped as preserve?**

(All Ensembles predict expansion of existing public contiguous preserves. In part, this provides an opportunity for restoration or creation activities that would compensate for unavoidable impacts from projects located outside of the preserve mapping. Impacts are expressed in terms of acres and also in terms of the functions lost. Compensation is provided by creating new acres or restoring the functions of degraded areas and is often provided within the boundaries of the project. However, creation or restoration within contiguous large preserves sometimes provides greater natural resource benefits than performing the same work on a "postage stamp" wetland surrounded by urban development. The Map shows these contiguous areas as preservation. Therefore, within areas mapped as preservation, projects that create/restore natural benefits are preferred compared to non-preserve projects. A second preference is that compensation include the acquisition and preservation of "new preserves" so that the area of actual preserves is expanded, rather than simply performing restoration on existing public preserves.)

Evaluation factors to be used.

Availability of compensatory mitigation. **State that the wetlands within the project footprint are part of a set of wetlands particularly preferred for restoration and therefore the project may preclude the wetlands' availability as compensatory mitigation for projects elsewhere in the study area.**

(Section 4.2 estimates, for each Ensemble, the percent of the total wetlands within the study area that are located in areas of "new preserves". "New preserves" are areas mapped as preserves but are not currently in public or other management for the purposes of natural resource benefits. For the five Ensembles, the percentage ranges from 17% to 24%. The percentage for the Map is 22%. These are the wetlands that would be targeted for acquisition and restoration to provide compensatory mitigation based on the preferences stated in the background paragraph above. Adjacent uplands would be available for creation of wetlands, if appropriate. Not all of these wetlands need restoration. Not all of these wetlands would be available for restoration. However, a larger percentage provides a greater selection of compensatory mitigation sites for projects in "development" areas.)

Reduction in available acreage ratio. **State whether filling wetlands within the project footprint reduces the choice of mitigation sites for other projects in "development" areas.**

(Section 4.2 calculates, for each Ensemble, a ratio of the acres of wetlands in "new preserves" (factor #3) divided by the acres of wetlands that will be filled (factor #1). For the five Ensembles, the ratio ranges from 2.6:1 to 4.4:1. The Map has a ratio of 4.0:1. Acreage ratios are a convenient surrogate for the detailed analysis of wetland functions and values in calculating mitigation. The ratio calculated here would occur if (1) all of the estimated wetland impacts were compensated within "new preserves" (unlikely that "all" since some compensation will be performed at the project site) and (2) all of the "new preserves" were used for compensation (unlikely that "all" since some of the mapped "new preserves" will not be suitable for this). However, a higher the ratio indicates greater choice in location of compensatory mitigation.)

Availability of replacement wetland function. **State whether filling the wetlands within the project footprint reduces the assurance that ecosystem functions lost from other projects in "development" areas can be replaced.**

(Section 4.2 describes that, for each Ensemble, the presence of function was scored either high, medium, or low for wetlands that will be filled and those that are in the "new preserves". An acre of wetland filled that has a high score would represent a large number of lost "units" of function. An acre of wetland within "new preserves" that scored low would, through restoration, provide a large number of replacement "units". The ratio of units of restoration divided by units of impact vary, for the five Ensembles, from 1.8:1 to 3.3:1. The Map has a ratio of 2.8:1. A higher ratio indicates greater assurance that the ecosystem functions can be replaced.)

D. **Has the alternative analysis demonstrated that the applicant has satisfied avoidance?**

(The MOA between the Corps and EPA Concerning the Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines requires the review to progress through a sequence demonstrating first, avoidance of impacts, second, minimization of impacts, and third, compensation for functions and values lost.)

E. **Has appropriate compensation been provided for functional replacement?**

(The analysis will use available numeric or other assessment tools, such as, the one published in the Joint State/Federal Mitigation Bank Review Team Process, Operational Draft, October 1998. Exceptional

consideration will be given to the wetlands' location on a landscape scale, for example, cumulative losses of seasonal wetlands.)

F. **Are buffer zones (e.g., uplands, open space) provided around wetlands and other waters, particularly stream and river corridors and flowways?**

(There is very little topographic relief within the study area, therefore the surface area of marshes, streams, and other waters greatly expands into adjacent lands during the wet season. Native vegetation surrounding the wet-season expanse provides habitat for wetland dependent wildlife and visual, noise, and other buffering between the wetland and adjacent human activities. The purpose of Question #A above is to evaluate how the project footprint disrupts the ideal situation: a large contiguous matrix of wetland and upland. If the proposed project addresses that, then the current question is an additional evaluation whether impacts are minimized within the project footprint.)

Evaluation Factors to be used.

Connectivity between major habitat areas. **State whether the buffer width and arrangement maintains connectivity across the project footprint to surrounding contiguous areas of native vegetation.**

(Section 4.4 reports the evaluation of the connections proposed within areas mapped as development. That evaluation did not include connections within areas mapped as preserves since the presumption was that contiguous areas of native vegetation would remain. The evaluations concluded that wider and more numerous connections are more immune to disturbance from adjoining land uses.)

Fringe. **State whether the buffer width and arrangement affects the estuarine fringe.**

(Section 4.4 reports the evaluation of different configurations of the development mapping along the estuarine fringe. None of the Ensembles directly affected mangrove or salt marsh, but those Ensembles that proposed, as preservation, the pineland and hardwood hammock plant communities behind the fringe were considered to protect the fringe's ability to provide aquatic nursery and foraging habitat. The Map shows these areas as preservation.)

II. Water quality and quantity.

A. **Is the increase in pollutant loading minimized?**

(Corps must evaluate compliance with water quality standards but considers Florida's certification of compliance as conclusive unless EPA advises the Corps to consider other aspects. However, changes to the proposed project must be evaluated to confirm that the proposal is the least damaging practicable alternative.)

Evaluation factor to be used.

Pollution loading. **State whether impervious surfaces have been minimized and if all practicable opportunities have been included to provide BMPs.**

(All the Ensembles predict conversion of native vegetation to development. Section 4.10 notes that development had higher pollutant runoff compared to natural vegetation but that can be minimized by treating the runoff through detention ponds, vegetated swales, and similar "Best Management Practices" (BMPs). Ensembles that mapped less area of development and/or suggested installing/retrofitting regional BMPs were considered to be less likely to adversely affect water quality. The Map shows, as preservation, some of the areas where BMPs are not practicable or are not currently required under Florida's rules that grandfather older subdivisions.)

B. **Have wetlands been preserved in locations and quantities to minimize freshwater pulses and assimilate pollutants?**

(Pulses of freshwater have detrimental effect on estuaries by rapidly changing the salinity.)

Evaluation factors to be used.

Freshwater pulses. **State whether the project, by reducing wetlands and buffers, will increase the likelihood of freshwater pulses.**

(All the Ensembles predict conversion of native vegetation to development. Section 4.10 notes that the impervious surfaces within development would have a more rapid runoff of rainfall compared to natural vegetation. Ensembles that mapped less area of development and preserved greater area of wetland were considered less likely to affect water quality. The Map shows, as preservation, wetlands along flowways and in contiguous preserves to maintain storage of peak flows.)

Contaminant Reduction. **State whether the project, by reducing the contiguous areas of wetland and buffer, will increase the likelihood of degradation of water quality downstream.**

(All the Ensembles predict conversion of native vegetation to development. Section 4.10 reports Ensembles that mapped less area of development and preserved greater area of wetland were considered less likely to affect water quality. The Map shows, as preservation, wetlands along flowways and in contiguous preserves that, among other things, provides capability to assimilate pollutants.)

C. **Are historic water flows maintained or restored?**

(The study area has many man-made changes to the historic flow patterns, including drainage canals, roads that block historic sheet-flow, and berms. Many ideas have been developed in the past to retrofit structures or to restore areas. Some of those presented during the preparation of this document include: (1) restore southern Golden Gate Estates; (2) improve and add culverts under US 41; (3) fix canal plugs on canal south of I-75; (4) change existing drainage works in Water Management District VI and Belle Meade that place pulse discharges to Rookery Bay; (5) add weirs in Cocohatchee Canal; (6) restore Clam Bay and Vanderbilt Lagoon; (6) detain additional water in northern Golden Gate Estates to reduce fresh water pulses to Naples Bay; and (7) restore flows from the Estero Bay Watershed to Halfway Creek and the Estero River. Due to the complexity of the issue, comprehensive watershed modeling is usually needed, such as the South Lee Study and the Lower West Coast Water Supply Plan by the South Florida Water Management District and the District VI improvements by Collier County.)

Evaluation factors to be used.

Water Management. **State whether the fill, by reducing the area of contiguous wetland, will degrade historic flow patterns.**

(Section 4.15 reports the assessment whether the five Ensembles addressed seven factors. existence of infrastructure; potential for home damage; requirements for home construction meeting the one-hundred-year storm event; change in flood depth; maintenance or improvement toward historic flow patterns; water storage; and aquifer zoning. Existing local rules provide criteria either preventing or providing restrictions on design of homes within floodplains to prevent damage. Existing rules provide for the maintenance and upgrades of infrastructure from new development. Section 4.15 reports Ensembles that suggested wider flowways or preservation of wetlands reduced the potential for changes in flood depth and maintained historic flow patterns. The Map proposes preservation of large areas of wetlands and wide flowways to reduce the reliance on structural water management solutions.)

Groundwater impact. **State whether the project, by reducing the contiguous area of wetlands, directly or indirectly degrades wetlands surrounding wellfields.**

(Section 4.10 reports that much of the drinking water comes from the Surficial Aquifer System, closely linked to conditions in the wetlands on the surface. Existing local rules protect the wetlands in the vicinity of the wellfields. Ensembles that placed additional wetlands in preservation were considered to further reduce the likelihood of impact. The Map maps a large area as preservation based on recognition that the aquifer is influenced by activities over a large portion of the study area and that indirect effects (such as change in hydropattern) of wetlands in the vicinity of wellfields are less likely to occur if surrounded by contiguous preserves.)

III. Habitat and listed species.

Note. The Corps reviews applications requesting authorization to work in wetlands and other Waters of the United States. However, the Corps evaluation can include evaluating the effects that related upland work may have on the aquatic environment or other Federal interests as appropriate and as provided by law, for example, the Endangered Species Act and National Historic Preservation Act.

A. **Does the proposed project fragment habitat?**

(The study area still has a wide variety and large population of wildlife. The "fronts" of suburban development have been expanding inland from the urban centers of Fort Myers, Bonita Springs, and Naples. As these fronts meet with each other and with the suburban development in Lehigh Acres and Golden Gate Estates, the once large expanses of habitat are becoming more fragmented. Many species forage over large areas and require a mixture of vegetative communities for their life histories. Many efforts have been taken to identify the large "islands" shared by many species and their links so a fabric of habitat is maintained to retain a sustainable sample of what was once present.)

Evaluation factors to be used.

Strategic Habitat Conservation Area (SHCA). **State whether the project will preclude the opportunity to place, within contiguous preserves, areas identified as SHCA to some number less than 5.4% of the total SHCA in the State.**

(The Florida Game and Freshwater Fish Commission report Closing the Gaps in Florida's Wildlife Habitat Conservation System identified the minimum quantity of land that would maintain Florida's animal and plant populations at levels sustainable into the future. The report maps 33% of the area of the State. The SHCAs are the mapped areas not currently under public ownership. Section 4.4 reports that 8.2% of the SHCAs are found in the study area. The areas mapped as preservation in the five Ensembles encompass from 4.6% to 5.7%. The Map encompasses 5.4%.)

Connectivity between major habitat areas. **State whether the footprint of the project either blocks or narrows a connection between two major habitat areas.**

(Section 4.4 reports the evaluation of the connections proposed within areas mapped as development. That evaluation did not include connections within areas mapped as preserves since the presumption was that contiguous areas of native vegetation would remain. The evaluations concluded that wider and more numerous connections are more immune to disturbance from adjoining land uses.)

Regionally significant natural resources. **State whether the project preserves regionally significant natural resources.**

(The Southwest Florida Regional Planning Council has inventoried regionally significant natural resources and has drafted a Strategic Land Acquisition/Conservation/Preservation Plan for Southwest Florida. The Estero Agency on Bay Management (ABM) has prepared an Estero Bay Watershed Land Conservation/Preservation Strategy Map" and has adopted guiding principals. For the latter, Section 4.4 reports the assessment of how the five Ensembles enhanced implementation of the ABM's work.)

Multi-Species Recovery Plan (MSRP). **State whether the project footprint precludes the opportunity to place 52% of the study area into contiguous areas managed for natural resource purposes.**

(Section 4.3 reports the assessment of how the alternative enhances implementation of the U.S. Fish and Wildlife Service's MSRP. The Map, and the criteria proper, explicitly support MSRP recommendations. For all species, the MSRP recommends preservation of contiguous areas of native vegetation. The area mapped as preservation by the five Ensembles range from 45% to 53% of the total study area. The Map provides 52%.)

B. **Is Xeric oak scrub, rosemary scrub, and scrubby pine flatwoods, and other rare resources associated with ancient dune systems preserved?**

(Not many examples of these plant communities remain in the study area.)

Evaluation factor to be used.

Fringe. **State whether the buffer width and arrangement affects the estuarine fringe.**

(Section 4.4 reports the evaluation of different configurations of the development mapping along the estuarine fringe. None of the Ensembles directly affected mangrove or salt marsh, but those Ensembles that proposed, as preservation, the pineland and hardwood hammock plant communities behind the fringe

were considered to protect the fringe's ability to provide aquatic nursery and foraging habitat. The Map shows these areas as preservation.)

C. **Are coastal forests (especially mangroves), coastal hammocks, sub-tropical hammocks, coastal pine flatwoods, and riparian forests (associated with streams or creeks) preserved?**

Factor to be used.

Flowways. **State whether the project will increased the vulnerability of these forests to impacts by removing the surrounding areas of vegetation.**

(Section 4.4 notes that most of the major habitat connections follow natural watercourses. Ensembles that mapped flowways through large contiguous areas better provided for a mix of upland and wetland habitat and for attenuation of peak flows. The Map shows large areas of contiguous preservation. A coastal and riparian forest that is part of a narrow flowway through a development is more vulnerable to impact from the development than if that forest was part of a contiguous preserve.)

D. **Are isolated and seasonal wetlands, including small wetlands, preserved or restored with functional buffers and water budgets that support natural hydroperiods? Where isolated wetlands are associated with larger sheetflow systems, is the system preserved?**

(Seasonal wetlands are found in shallow depressions that rely heavily on direct rainfall and runoff from adjacent uplands, with sheetflow between depressions during the wet season. The depressions are not evenly distributed across the landscape.)

Evaluation factor to be used.

Seasonal wetlands. **State whether the project will reduce the area of seasonal wetlands in contiguous preserves to some number less than 76% of the total area of seasonal wetlands in the study area.**

(Section 4.4 estimates that, for the five Ensembles, from 70% to 86% of the total area of seasonal wetlands are located within areas mapped as preservation. The higher the percentage, the more likely that natural hydropatterns will be maintained. The Map provides 76%.)

E. **Are high marsh systems and sea grasses preserved?**

F. **Is Florida panther habitat preserved?**

(This wide ranging species requires a mixture of upland and wetland habitat. The Florida Panther Habitat Preservation Plan (HPP) identified as either Priority 1 or Priority 2 those lands not in public ownership but essential for maintaining the population.)

Evaluation factors to be used.

Florida panther priority lands. **State whether the project will reduce the quantity of Priority 1 and 2 habitat within contiguous preserves to some number less than 70% of the total priority habitat in the study area.**

(Section 4.3 estimates that, for the five Ensembles, from 56% to 72% of the total Priority 1 and 2 lands within the study area will be encompassed by the lands mapped as preservation. The Map provides 70%. The higher percentage within contiguous preserves provides greater assurance of preserving the population.)

Florida panther on agricultural lands. **State whether the project blocks connection to or affects the agricultural lands that have suitable habitat.**

(Section 4.3 estimates that, for the five Ensembles, from 18% to 26% of the total Priority 1 and 2 lands within the study area will be encompassed by the lands mapped as agriculture. These areas are typically adjacent to public or proposed contiguous preserves and are important components of the total habitat available to the panther. In addition, those Ensembles that proposed criteria to restrict the intensification of

agriculture were considered to increase the assurance of the preservation of the species. The agricultural area shown on the Map encompasses 18% of the Priority 1 and Priority 2 lands in the study area.)

G. **Are Bald eagle nests protected**?

(The Habitat Management Guidelines for the Bald Eagle in the Southern Region provides for minimum buffer distances for construction and permanent activity near a nest site. It does not protect foraging area.)

Evaluation factor to be used.

Bald eagle. **State whether the project, by removing native vegetation outside of the nest buffer zones, will reduce the number of nests within contiguous preserves below 20.**

(Section 4.3 estimates that, for the five Ensembles, from 18 to 20 of the total 27 known nests within the study area will be located within areas mapped as preservation. The Map maps 20 nests. Location within contiguous preserves provides higher assurance of preservation of the species since these sites also include adjacent lands used for foraging.)

H. **Is nesting and foraging habitat of the American crocodile protected and buffered from adverse impacts?**

(The American alligator is not endangered but is listed under the Endangered Species Act due to its similarity of appearance to the crocodile.)

Evaluation factors to be used.

American crocodile. **State whether all practicable opportunities have been included to preserve wetlands to provide attenuation of flows.**

(Section 4.3 notes that changes in the timing and quantity of freshwater flows affect plant and animal communities in estuaries, where the crocodile is found. As measured under Question #B in part II above, maintenance of wide flowways reduce the potential changes in hydropatterns, increasing the potential for preservation of this species.)

American alligator. **State whether the project will reduce the areas of seasonal wetlands available for this species.**

(Section 4.3 notes that this species is found throughout the area in large wetland areas, including the seasonal ones measured in Question #D above.)

I. **Is shorebird nesting, foraging and resting areas protected and buffered from adverse impacts?**

(This question applies to shorebirds in general, although one in particular is listed under the Endangered Species Act.)

Evaluation factor to be used.

Piping plover. **Note that potential changes in water quality, as measured by the questions in part II above, may affect the beaches.**

(Section 4.3 notes that none of the Ensembles propose direct impact (fill) on the barrier beaches used as wintering sites.)

J. **Are wading bird rookeries protected?**

(Set Back Distances to Protect Nesting Bird Colonies from Human Disturbances in Florida (Rodgers and Smith, 1995) provides for minimum buffer distances for construction and permanent activity near a rookery.

It does not protect foraging area. Foraging range for wading birds is up to 15 kilometers, 30 kilometers for Wood storks.)

Evaluation factors to be used.

Wading bird rookeries. **State whether the project, by removing native vegetation outside of the rookery buffer distances but within foraging range, will reduce the number of rookeries within contiguous preserves below 17.**

(Section 4.4 estimates that, for the five Ensembles, from 13 to 18 of the total 27 known rookeries within the study area will be located within areas mapped as preservation. The Map shows 17 rookeries. Location within contiguous preserves provides higher assurance of preservation of the species since these sites also include adjacent lands used for foraging.)

Woodstork rookeries. **State whether the project, by removing native vegetation outside of the rookery buffer distances but within foraging range, will reduce the number of rookeries within contiguous preserves below 12.**

(Section 4.4 estimates that, for the five Ensembles, from 9 to 14 of the total 14 known rookeries within the study area will be located within areas mapped as preservation. The Map maps 12 rookeries. Location within contiguous preserves provides higher assurance of preservation of the species since these sites also include adjacent lands used for foraging.)

K. **Are sea turtle nesting areas protected from adverse impacts and construction impacts proposed during the nesting season?**

(This question applies to the Loggerhead, Green, Hawksbill, and Kemp's Ridley sea turtles.)

Evaluation factor to be used.

Sea turtles. **Note that potential changes in water quality, as measured by the questions in part II above, may affect the beaches.**

(Section 4.3 notes that none of the Ensembles propose direct impact (fill, artificial lighting, human presence, and exotic vegetation) on the nesting beaches. However, there could be an effect if there is a change in water quality.)

L. **Are red-cockaded woodpecker cluster sites and associated foraging habitat protected on-site (or mitigated off-site when consistent with regional recovery plans and developed in conjunction with fish and wildlife agency recommendations)?**

(Since the habitat of this species is in old growth pine, it is very difficult to identify new sites beyond those presently occupied.)

Evaluation factor to be used.

Red cockaded woodpecker. **State whether the project, by removing native vegetation outside of the cluster site buffers and within foraging range, will reduce the number of cluster sites within contiguous preserves below 13.**

(Section 4.4 estimates that, for the five Ensembles, from 2 to 18 of the total 40 known cluster sites within the study area will be located within areas mapped as preservation. The Map shows 13 cluster sites. Location within contiguous preserves provides higher assurance of preservation of the species since these sites also include adjacent lands used for foraging.)

M. **Are Audubon caracara nesting territories protected from adverse impacts consistent with regional recovery plans or fish and wildlife agency recommendations?**

(The study area is on the fringe of the ten county area where the population is found.)

Evaluation factor to be used.

Audubon's crested caracara. **State whether the project footprint affects adjacent agricultural or prairie areas, directly or indirectly, thereby reducing the availability of habitat on agriculture lands below 10% of the study area.**

(Section 4.3 estimates that, for the five Ensembles, from 10% to 18% of the study area is mapped as agriculture. This species prefers native range and unimproved pasture for foraging. Those agricultural areas remaining in low intensity use provide more assurance that appropriate habitat, with interspersed seasonal wetlands, will be maintained. The Map provide 10% of the study area but also provides for non-intensification of agricultural use.)

N. **Is Florida scrub jay habitat protected from adverse impacts consistent with regional recovery plans developed in conjunction with fish and wildlife agency recommendations?**

(Since the habitat of this species is in scrub, it is very difficult to identify new sites beyond those presently occupied.)

Evaluation factor to be used.

Scrub jay. **State whether the project, by removing native vegetation outside of the colony site and within potential areas for expansion, will reduce the number of colony sites within contiguous preserves below 11.**

(Section 4.4 estimates that, for the five Ensembles, from 6 to 11 of the total 26 known colonies within the study area will be located within areas mapped as preservation. The Map maps 11 colony sites. Location within contiguous preserves provides higher assurance of preservation of the species since these sites also include adjacent lands for foraging and expansion of the families.)

O. **Is snail kite foraging and nesting habitat protected or compensated consistent with regional recovery plans or fish and wildlife agency recommendations?**

(Feeds only on apple snails that are in turn found only in seasonal wetlands.)

Evaluation factor to be used.

Seasonal wetlands. **State whether the project will reduce the area of seasonal wetlands in contiguous preserves to some number less than 76% of the total area of seasonal wetlands in the study area.**

(Same as Question #D above.) (Section 4.4 estimates that, for the five Ensembles, from 70% to 86% of the total area of seasonal wetlands are located within areas mapped as preservation. The higher the percentage, the more likely that natural hydropatterns will be maintained. The Map provides 76%.)

P. **Are projects with adverse impacts to eastern indigo snake habitat developed consistent with the provisions of the Eastern Indigo Snake Protection Guidelines (FWS, 1998)?**

Q. **Are federally listed plant species protected and buffered from adverse impacts?**

R. **Is construction within designated critical habitat of the West Indian manatee conducted consistent with the Standard Manatee Protection Construction Guidelines to minimize impacts associated with water craft-related mortality?**

IV. Other public interest factors.

A. **Is the project of a nature that would support additional development pressure within the preservation area?** For example: new public/private utilities; new or expanded roads; new well fields or well field expansions.

B. **Does the project affect hurricane preparedness?**

(The South Florida Regional Planning Council's Hurricane Storm Tide Atlas and Hurricane Evacuation Study estimate the population to be evacuated, the shelters available, and evacuation times based on road capacities. The Corps does not have direct authority over preparedness. The Corps can consider hurricane preparedness concerns as part of its public interest reviews, for example, safety and flooding.)

Evaluation factor to be used.

Hurricane preparedness. **State whether the site itself or the evacuation route is particularly subject to flooding or wind damage and identify the actions by the applicant or local government that are mitigating the concern (for example, improvement of roads or identification of shelters).**

(Section 4.15 reports that none of the Ensembles were considered to have changed preparedness. However, most of the areas mapped preservation on the Map have a high percentage of wetlands or are along the coastal or riverine fringe. These areas are natural locations for flooding. Some of these areas are also typically distant from major road networks or existing shelters, increasing the vulnerability during evacuation within or outside of the region.)

C. **Are reasonable expectations of the landowner affected?**

(A wide variety of actions by the Federal, State, and local governments over time provide the background for the landowner's understanding of the extent of any limitations to the exercise of rights from property ownership.)

Evaluation factor to be used.

Property rights. **State the influences on the rights associated with ownership of the project site. These would include: (1) designations in the Comprehensive Plans, (2) history of the landowner's preparation of the project proposal prior to submission of the application, (3) development orders or other actions issued by local, State, or Federal governments, and (4) surrounding land use and activities that have affected or are expected to affect the value of the property.**

(Section 4.6 reports the assessment whether the five Ensembles addressed three factors: fair market value of property; reasonable expectations for use of land and return on investment; and, vested rights. Ensembles with additional restrictions beyond those in the Comprehensive Plans or that designated areas as preservation beyond those in the Future Land Use Maps would not meet the expectations of the landowners affected. These permit review criteria and the accompanying map do not establish a particular restriction or land use, but identify evaluation questions to assess compliance with existing limitations established by Federal law.)

Difference from Comprehensive Plans. **State the degree of difference from the local Comprehensive Plan (and accompanying goals and policies).**

(Section 4.6 reports the assessment that decisions that departed from the current Comprehensive Plans would be detrimental not only to landowners' rights but also to other socio-economic concerns of the community. All five Ensembles represent potential futures. The Comprehensive Plans have been modified in the past and may be modified in the future. The Ensemble that represents the Comprehensive Plan is not exactly representative of the current Plan, for example, in southern Golden Gate Estates.)

D. **Does the project affect sustainability of local economy?**

(This issue is very complex. For a project submitted by a private enterprise, the Corps generally assumes that appropriate economic evaluations have been completed, the proposal is economically viable, and is needed in the market place.)

Evaluation factors to be used.

Economic Sustainability. **State whether the project will make a substantial difference to whether the local economy continues to be "sustainable".** This will (1) note the project located within the preservation mapping will be an incremental increase over the 38% of the study area already mapped for development, (2) recognize that there is a contribution to the local economy, but (3) consider that the increase is a very small portion of the total economy.

(Section 4.6 reports the assessment of how the five Ensembles affected six factors describing economic impact: job creation; home affordability; cost of living; property tax base; cost to implement; and increased taxes. Increasing or decreasing the area of development mapped in the Ensembles increased or decreased the creation of jobs and the size of the local government's property tax base. Increasing or decreasing the restrictions on use increased or decreased the costs of producing the product, which affects home affordability and cost of living. Increasing the area of preservation or the area of restoration efforts implies an increased cost to local government to implement, which when combined with a smaller tax base results in higher taxes. All the Ensembles predict that suburban development will continue, but they differ in how much more. Approximately 20% of the study area is currently urban or suburban development (included in this 20% are "vacant" lots and lands with roads, comprising greater than 3% of the study area). The five Ensembles range (in their predictions of the future extent of development) from 31% to 41%. The Map shows 38%. Once the 38% of the area is developed with the resulting economic activity, each incremental increase in area of development will be a smaller proportion of the total economy.)

E. **Is management of public lands affected?**

(Public lands provide the opportunity for the general public to access the unique natural characteristics of the region.)

Evaluation factor to be used.

Management of public lands. **State whether the project affects management of public lands in the vicinity.**

(Section 4.8 notes that public lands are affected by the compatibility of adjacent lands and by actions that directly degrade or improve the public lands proper. Ensembles that had the least effect on public lands provided non-intensive agriculture or expanded contiguous preserves to separate public lands from suburban development.)

Legend: Development.

Goal. The areas mapped Development include areas within the study area that are: (1) presently in urban and suburban use, and (2) adjacent areas that are considered most suitable for urban and suburban development in the future. The areas mapped Development are recognized to be the focal point for present and future urban development. Land and water use decisions should direct development into this area in lieu of promoting urban expansion elsewhere, while maintaining watershed integrity and coastal resources within the urban boundary. Permit decisions for new roads, utilities, and other infrastructure should also support these goals.

Criteria.

I. Wetlands.

A. **Have impacts been minimized?** The answer must be supported by an analysis of alternative site plans.

(Corps regulations, including the Section 404(b)(1) Guidelines, require an analysis that shows the proposed project is the least damaging practicable alternative. The analysis is performed in sequence: (1) demonstration that no other sites are available to avoid the wetland impact, or if available, have greater impact; (2) demonstration that the selected site and selected site plan has the minimum impact compared to other alternatives; and (3) compensation for the resulting unavoidable impacts is provided. Presumptions are: (1) water dependency; (2) upland impact is less damaging to the aquatic environment.

The U.S. EPA may formally raise concerns with the alternative analysis by writing comment letters as provided by the 404q MOU. The Map shows a large area of vacant/natural land for development. The Corps will presume that proposed development within the area mapped as development is appropriate.)

Evaluation factors to be used.

Avoidance of wetland impact. **State whether the acres of proposed fill would contribute to a cumulative fill greater than 5.6% of the wetlands in the study area.**

(Section 4.2 estimates that, for the five Ensembles, from 5.5% to 7.0% of the wetlands in the study area will be filled. The lower percentage better satisfies the requirement for avoidance. The estimate for the Map is 5.6%. The bulk of the estimated impact was from projects within areas mapped as development. However, in the calculation of this estimate, only a portion of wetlands on the site would be filled. Some projects will impact more than others by the nature of the projects and the configuration of the wetlands: the amount proposed must be justified by an analysis comparing alternative site plans.)

Loss of buffers adjacent to wetlands. **State whether the site plan preserves contiguous areas of wetlands and buffers vegetation, even if not adjoining public preserves, so that greater than 42% of the study area is preserved.**

(Section 4.2 estimates that existing preserves total 27% of the study area. Native vegetation (upland and wetland, including exotics) occupies 58%. For the five Ensembles, areas mapped as preserve range from 38% to 43% of the study area. The estimate for the Map is 42%. Natural resource benefits result from a matrix of upland and wetland. This matrix is ideally provided in contiguous preserves. Buffers outside of contiguous preserves have a higher probability to be impacted. Preservation of a wetland and buffer provides greater benefits than preserving wetlands alone.)

B. **For applications for projects that propose, individually, impacts that are a large percentage of the cumulative numbers for any of the evaluation factors, should a project specific EIS be prepared to support the permit decision?**

C. **Has the alternative analysis demonstrated that the applicant has satisfied avoidance?**

(The MOA between the Corps and EPA Concerning the Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines requires the review to progress through a sequence demonstrating first, avoidance of impacts, second, minimization of impacts, and third, compensation for functions and values lost.)

D. **Has appropriate compensation been provided for functional replacement?**

(The analysis will use available numeric or other assessment tools, such as, the one published in the Joint State/Federal Mitigation Bank Review Team Process, Operational Draft, October 1998. Exceptional consideration will be given to the wetlands' location on a landscape scale, for example, cumulative losses of seasonal wetlands.)

E. **Has the project design optimized for habitat the design of retention lake shorelines?**

(Retention lake shorelines are often narrow strips of vegetation subject to disturbance from adjacent activities. Designs that create wider "shelves" and planted buffers reduce disturbance. Designs that include shallow depression "potholes" to concentrate fish and amphibians are concentrated during low water levels ehance their value to wading birds and other species.)

F. **Are buffer zones (e.g., uplands, open space) provided around wetlands and other waters, particularly stream and river corridors and flowways?**

(There is very little topographic relief within the study area, therefore the surface area of marshes, streams, and other waters greatly expands into adjacent lands during the wet season. Native vegetation surrounding the wet-season expanse provides habitat for wetland dependent wildlife and visual, noise, and other buffering between the wetland and adjacent human activities.)

Factors to be used.

Connectivity between major habitat areas. **State whether the buffer width and arrangement maintains connectivity across the project footprint to major habitat preserves.**

(Though not formally listed, inspection of the Ensembles show connections proposed between major habitat preserves such as Corkscrew Marsh, Estero Bay, Six Mile Cypress Strand, Belle Meade, Rookery Bay, and Fakahatchee Strand. The evaluations concluded that wider and more numerous connections are more immune to disturbance from adjoining land uses.)

Fringe. **State whether the buffer width and arrangement affects the estuarine fringe.**

(Section 4.4 reports the evaluation of different configurations of the development mapping along the estuarine fringe. None of the Ensembles directly affected mangrove or salt marsh, but those Ensembles that proposed, as preservation, the pineland and hardwood hammock plant communities behind the fringe were considered to protect the fringe's ability to provide aquatic nursery and foraging habitat. The Map shows these areas as preservation.)

II. Water quality and quantity.

A. **Is the increase in pollutant loading minimized?**

(Corps must evaluate compliance with water quality standards but considers Florida's certification of compliance as conclusive unless EPA advises the Corps to consider other aspects. However, changes to the proposed project must be evaluated to confirm that the proposal is the least damaging practicable alternative.)

Evaluation factor to be used.

Pollution loading. **State whether impervious surfaces have been minimized and if all practicable opportunities have been included to provide BMPs.**

(Section 4.10 notes that development had higher pollutant runoff compared to natural vegetation but that can be minimized by treating the runoff through detention ponds, vegetated swales, and similar "Best Management Practices" (BMPs). Ensembles that mapped less area of development and/or suggested installing/retrofitting regional BMPs were considered to be less likely to adversely affect water quality.)

B. **Have wetlands been preserved in locations and quantities to minimize freshwater pulses and assimilate pollutants?**

(Pulses of freshwater have detrimental effect on estuaries by rapidly changing the salinity.)

Evaluation factors to be used.

Freshwater pulses. **State whether all practicable opportunities have been included to preserve wetlands along flowways to provide attenuation of flows.**

(All the Ensembles predict conversion of native vegetation to development. Section 4.10 notes that the impervious surfaces within development would have a more rapid runoff of rainfall compared to natural vegetation. Ensembles that mapped less area of development and preserved greater area of wetland were considered less likely to adversely affect water quality. The Map shows, as preservation, wetlands along flowways and in contiguous preserves to maintain storage of peak flows.)

Contaminant Reduction. **State whether all practicable opportunities have been included to preserve wetlands within flowways to provide treatment downstream of the project.**

(All the Ensembles predict conversion of native vegetation to development. Section 4.10 reports Ensembles that mapped less area of development and preserved greater area of wetland were considered less likely to affect water quality. The Map shows, as preservation, wetlands along flowways and in contiguous preserves that, among other things, provides capability to assimilate pollutants.)

C. **Are historic water flows maintained or restored?**

(The study area has many man-made changes to the historic flow patterns, including drainage canals, roads that block historic sheet-flow, and berms. Due to the complexity of the issue, comprehensive watershed modeling is usually needed, such as the South Lee Study and the Lower West Coast Water Supply Plan by the South Florida Water Management District and the District VI improvements by Collier County.)

Evaluation factor to be used.

Water Management. **State whether all practicable opportunities have been included for non-structural maintenance of historic flow patterns.**

(Section 4.15 reports the assessment whether the five Ensembles addressed seven factors. existence of infrastructure; potential for home damage; requirements for home construction meeting the one-hundred-year storm event; change in flood depth; maintenance or improvement toward historic flow patterns; water storage; and aquifer zoning. Existing local rules provide criteria either preventing or providing restrictions on design of homes within floodplains to prevent damage. Existing rules provide for the maintenance and upgrades of infrastructure from new development. Section 4.15 reports Ensembles that suggested wider flowways or preservation of wetlands reduced the potential for changes in flood depth and maintained historic flow patterns. The Map proposes wide flowways to provide storage of surface waters and to reduce the reliance on structural water management solutions.)

D. **Have alternatives to installation of individual septic systems been considered?**

(One of the sources of existing and increased load in pollutants is from septic systems. Older systems may be located too close to the water table or to open water. Newer systems add more load than would be seen if waste was treated in package plants or regional systems. The evaluation of the cumulative effect of the project will identify if all practicable opportunities have been taken to avoid use of on-site-disposal-systems (OSDSs) or to retrofit package or regional treatment to existing OSDSs.)

III. Habitat and listed species.

Note. The Corps reviews applications requesting authorization to work in wetlands and other Waters of the United States. However, the Corps evaluation can include evaluating the effects that related upland work may have on the aquatic environment or other Federal interests as appropriate and as provided by law, for example, the Endangered Species Act and National Historic Preservation Act.

A. **Does the proposed project provide compensation for wide ranging species?**

(Wide-ranging species that may require off-site compensation for habitat impacts under a landscape-scale analysis include the Florida panther, Florida black bear, wood stork, snail kite, eastern indigo snake, red-cockaded woodpecker, big cypress fox squirrel, state-listed wading birds, and migratory birds. For some species, some geographic locations, or source project types, avoidance of the impact will be preferred. Off-site compensation for impacts to individuals for habitat may not be adequate. In determining off-site habitat compensation requirements, the impacts to individuals of a species or species habitat will be assessed, including the potential for incidental take, the habitat quality, and the function of the habitat on a landscape scale. The Map labels certain areas as "Compensate for Wide-Ranging Species" for locations expected to be developed but that provides particularly important habitat.)

Evaluation factors to be used.

Strategic Habitat Conservation Area (SHCA). **State whether any of the 2.8% of the total area of SHCA in the State is preserved as habitat within the proposed footprint of the project.**

(The Florida Game and Freshwater Fish Commission report Closing the Gaps in Florida's Wildlife Habitat Conservation System identified the minimum quantity of land that would maintain Florida's animal and plant populations at levels sustainable into the future. The report maps 33% of the area of the State. The SHCAs are the mapped areas not currently under public ownership. Section 4.4 reports that 8.2% of the SHCAs are found in the study area. For the Map, 2.8% is located outside of the preservation areas.)

Connectivity between major habitat areas. **State whether the footprint of the project either blocks or narrows a connection between two major habitat areas.**

(Section 4.4 reports the evaluation of the connections proposed within areas mapped as development. The evaluations concluded that wider and more numerous connections are more immune to disturbance from adjoining land uses.)

Regionally significant natural resources. **State whether the project maintains or connects regionally significant natural resources, or, through compensatory mitigation, acquires and restores areas mapped as preservation.**

(The Southwest Florida Regional Planning Council has inventoried regionally significant natural resources and has drafted a Strategic Land Acquisition/Conservation/Preservation Plan for Southwest Florida. The Estero Agency on Bay Management (ABM) has prepared an Estero Bay Watershed Land Conservation/Preservation Strategy Map" and has adopted guiding principals. For the latter, Section 4.4 reports the assessment of how the five Ensembles enhanced implementation of the ABM's work.)

Multi-Species Recovery Plan (MSRP). **State whether all practical measures have been taken to maintain habitat for listed species on site or, as compensatory mitigation, acquires and restores areas mapped as preservation.**

(Section 4.3 reports the assessment of how the alternative enhances implementation of the U.S. Fish and Wildlife Service's MSRP. The Map, and the criteria proper, explicitly support MSRP recommendations. For all species, the MSRP recommends encouraging management of privately owned lands.)

B. **Is Xeric oak scrub, rosemary scrub, and scrubby pine flatwoods, and other rare resources associated with ancient dune systems preserved?**

(Not many examples of these plant communities remain in the study area.)

Evaluation factor to be used.

Fringe. **State whether the buffer width and arrangement affects the estuarine fringe.**

(Section 4.4 reports the evaluation of different configurations of the development mapping along the estuarine fringe. None of the Ensembles directly affected mangrove or salt marsh, but the pineland and hardwood hammock plant communities behind the fringe were considered to protect the fringe's ability to provide aquatic nursery and foraging habitat.)

C. **Are coastal forests (especially mangroves), coastal hammocks, sub-tropical hammocks, coastal pine flatwoods, and riparian forests (associated with streams or creeks) preserved?**

Factor to be used.

Flowways. **State whether all practical measures have been taken to provide a wide flowway.**

(Section 4.4 notes that most of the major habitat connections follow natural watercourses. Ensembles that mapped flowways through large contiguous areas better provided for a mix of wetland and buffer habitat and for attenuation of peak flows. A coastal and riparian forest within a development is less vulnerable to impact from adjacent activities if buffered by vegetation.)

D. **Are isolated and seasonal wetlands, including small wetlands, preserved or restored with functional buffers and water budgets that support natural hydroperiods? Where isolated wetlands are associated with larger sheetflow systems, is the system preserved?**

(Seasonal wetlands are found in shallow depressions that rely heavily on direct rainfall and runoff from adjacent uplands, with sheetflow between depressions during the wet season.)

Evaluation factor to be used.

Seasonal wetlands. **State whether appropriate buffers and water management will maintain the natural hydropatterns.**

(For the Map, 24% of the total area of seasonal wetlands are located outside of areas mapped as preservation.)

E. **Are high marsh systems and sea grasses preserved?**

F. **Is Florida panther habitat preserved?**

(This wide ranging species requires a mixture of upland and wetland habitat. The Florida Panther Habitat Preservation Plan (HPP) identified las Priority 1 or Priority 2 lands not in public ownership but essential for maintaining the population.)

Evaluation factors to be used.

Florida panther priority lands. **State whether the project design will maintain habitat within its footprint, and thereby reduce the quantity of "developed" Priority 1 and 2 to some number less than 30% of the total priority land in the study area.**

(Section 4.3 estimates that, for the five Ensembles, from 56% to 72% of the total Priority 1 and 2 lands within the study area will be encompassed by the lands mapped as preservation. For the Map, 30% of the total Priority 1 and 2 lands within the study area will be within lands mapped as development or agricultural. The 30% number is after existing public preserves are expanded to the extents shown on the accompanying map as preservation.)

G. **Are Bald eagle nests protected and buffered consistent with the recommendations of the Habitat Management Guidelines for the Bald Eagle in the Southern Region?**

(The referenced document provides for minimum buffer distances for construction and permanent activity near a nest site. It does not protect foraging area.)

Evaluation factor to be used.

Bald eagle. **State whether minimum buffer distances are provided and if, in addition, adjacent land for foraging is preserved.**

(For the Map, the 7 of the total 27 known nests within the study area will be surrounded by development or agriculture.)

H. **Is nesting and foraging habitat of the American crocodile protected and buffered from adverse impacts?**

(The American alligator is not endangered but is listed under the Endangered Species Act due to its similarity of appearance to the crocodile.)

Evaluation factors to be used.

American crocodile. **State whether all practicable opportunities have been included to preserve wetlands to provide attenuation of flows.**

(Section 4.3 notes that changes in the timing and quantity of freshwater flows affect plant and animal communities in estuaries, where the crocodile is found. As measured under Question #B in part II above, maintenance of wide flowways reduce the potential changes in hydropatterns, increasing the potential for preservation of this species.)

American alligator. **State whether the project will reduce the area of seasonal wetlands available for this species.**

(Section 4.3 notes that this species is found throughout the area in large wetland areas, including the seasonal ones measured in Question #C above.)

I. **Is shorebird nesting, foraging and resting areas protected and buffered from adverse impacts?**

(This question applies to shorebirds in general, although one in particular is listed under the Endangered Species Act.)

Evaluation factor to be used.

Piping plover. **Note that potential changes in water quality, as measured by the questions in part II above, may affect the beaches.**

(Section 4.3 notes that none of the Ensembles propose direct impact (fill) on the barrier beaches used as wintering sites.)

J. **Are wading bird rookeries preserved and buffered consistent with the "Set Back Distances to Protect Nesting Bird Colonies from Human Disturbances in Florida" (Rodgers and Smith, 1995)?**

(The referenced document provides for minimum buffer distances for construction and permanent activity near a rookery. It does not protect foraging area. Foraging range for wading birds is up to 15 kilometers, 30 kilometers for Wood storks.)

Evaluation factors to be used.

Wading bird rookeries. **State whether the project protects the rookery, if present.**

(For the Map, 8 of the total 25 known rookeries within the study area will be surrounded by development or agriculture.)

Woodstork rookeries. **State whether the project protects the rookery, if present.**

(For the Map, 2 of the total 14 known rookeries within the study area will be located within areas mapped as development or agriculture.)

K. **Are sea turtle nesting areas protected from adverse impacts and construction impacts proposed during the nesting season?**

(This question applies to the Loggerhead, Green, Hawksbill, and Kemp's Ridley sea turtles.)

Evaluation factor to be used.

Sea turtles. **Note that potential changes in water quality, as measured by the questions in part II above, may affect the beaches.**

(Section 4.3 notes that none of the Ensembles propose direct impact (fill, artificial lighting, human presence, and exotic vegetation) on the nesting beaches. However, there could be an effect if there is a change in water quality.)

L. **Are red-cockaded woodpecker cluster sites and associated foraging habitat protected on-site (or mitigated off-site when consistent with regional recovery plans and developed in conjunction with fish and wildlife agency recommendations)?**

(Since the habitat of this species is in old growth pine, it is very difficult to identify new sites beyond those presently occupied.)

Evaluation factor to be used.

Red cockaded woodpecker. **State whether the foraging area is maintained.**

(For the Map, 27 of the total 40 known cluster sites within the study area will be located within areas mapped as development or agriculture. Protection of the cluster itself and a large area surrounding it for foraging provides higher assurance of preservation of the species.)

M. **Are Audubon caracara nesting territories protected from adverse impacts consistent with regional recovery plans or fish and wildlife agency recommendations?**

(The study area is on the fringe of the ten county area where the population is found.)

Evaluation factor to be used.

Audubon's crested caracara. **State whether the project footprint affects adjacent agricultural or prairie areas, directly or indirectly, thereby reducing the availability of habitat on agriculture lands below 10% of the study area.**

(Section 4.3 estimates that, for the five Ensembles, from 10% to 18% of this study area is mapped as agriculture. This species prefers native range and unimproved pasture for foraging. Those agricultural areas remaining in low intensity use provide more assurance that appropriate habitat, with interspersed seasonal wetlands, will be maintained. The Map provides 10% of the study area but also provides for non-intensification of agricultural use.)

N. **Is Florida scrub jay habitat protected from adverse impacts consistent with regional recovery plans developed in conjunction with fish and wildlife agency recommendations?**

(Since the habitat of this species is in scrub, it is very difficult to identify new sites beyond those presently occupied.)

Evaluation factor to be used.

Scrub jay. **State whether the project protects the colonies, if present.**

(For the Map, 15 of the total 26 known colonies within the study area will be located within areas mapped as development or agriculture.)

O. **Is snail kite foraging and nesting habitat protected or compensated consistent with regional recovery plans or fish and wildlife agency recommendations?**
(Feeds only on apple snails that are in turn found only in seasonal wetlands.)

Evaluation factor to be used.

Seasonal wetlands. **State whether the project provides appropriate buffers and water management to maintain the natural hydropatterns.**

(Same as Question #D above.) (For the Map, 24% of the total area of seasonal wetlands are located outside of areas mapped as preservation.)

P. **Are projects with adverse impacts to eastern indigo snake habitat developed consistent with the provisions of the Eastern Indigo Snake Protection Guidelines (FWS, 1998)?**

Q. **Are federally listed plant species protected and buffered from adverse impacts?**

R. **Is construction within designated critical habitat of the West Indian manatee conducted consistent with the Standard Manatee Protection Construction Guidelines to minimize impacts associated with water craft-related mortality?**

IV. Other public interest factors.

A. **Does the project affect hurricane preparedness?**

(The South Florida Regional Planning Council's Hurricane Storm Tide Atlas and Hurricane Evacuation Study estimates the population to be evacuated, the shelters available, and evacuation time based on road capacities. The Corps does not have direct authority over preparedness. The Corps can consider hurricane preparedness concerns as part of its public interest reviews, for example, safety and flooding.)

Evaluation factor to be used.

Hurricane preparedness. **If the project site itself or evacuation route is particularly subject to flooding or wind damage, identify the actions by the applicant or local government that mitigate the concern, for example, improvement of roads or identification of shelters.**

(Section 4.15 reports that none of the Ensembles were considered to have changed preparedness. The areas mapped as development have ongoing local preparedness planning.)

B. **Are reasonable expectations of the landowner affected?**

(A wide variety of actions by the Federal, State, and local governments over time provide the background for the landowner's understanding of the extent of any limitations to the exercise of rights from property ownership.)

Evaluation factor to be used.

Property rights. **State the influences on the rights associated with ownership of the project site.** These would include: (1) designations in the Comprehensive Plans, (2) history of the landowner's preparation of the project proposal prior to submission of the application, (3) development orders or other actions issued by local, State, or Federal governments, and (4) surrounding land use and activities that have affected or are expected to affect the value of the property.

(The areas of development and agriculture shown by the Map are also mapped as development and agriculture by the Comprehensive Plans. Section 4.6 reports the assessment whether the five Ensembles addressed three factors: fair market value of property; reasonable expectations for use of land and return on investment; and, vested rights. Ensembles with additional restrictions beyond those in the Comprehensive Plans would not meet the expectations of the landowners affected. These permit review criteria do not establish a particular restriction or land use, but identify evaluation questions to assess compliance with existing limitations established by Federal law.)

Difference from Comprehensive Plans. **State the degree of difference from the local Comprehensive Plan (and accompanying goals and policies).**

(Section 4.6 reports the assessment that decisions that departed from the current Comprehensive Plans would be detrimental not only to landowners' rights but also to other socio-economic concerns of the community. All five Ensembles represent potential futures. The Comprehensive Plans have been modified in the past and may be modified in the future. The Ensemble that represents the Comprehensive Plan is not exactly representative of the current Plan, for example, in southern Golden Gate Estates.)

D. **Affects sustainability of local economy?**

(This issue is very complex. For a project submitted by a private enterprise, the Corps generally assumes that appropriate economic evaluations have been completed, the proposal is economically viable, and is needed in the market place.)

Evaluation factors to be used.

Economic Sustainability. **State whether restrictions applied to the development affect the sustainability of the local economy. This will note that the increased costs from the restrictions may be a small portion of the total economy.**

(Section 4.6 reports the assessment of how the five Ensembles affected six factors describing economic impact: job creation; home affordability; cost of living; property tax base; cost to implement; and increased taxes. Increasing or decreasing the area of development mapped in the Ensembles increased or decreased the creation of jobs and the size of the local government's property tax base. Increasing or decreasing the restrictions on use increased or decreased the costs of producing the product, which affects home affordability and cost of living. Increasing the area of preservation or the area of restoration efforts implies an increased cost to local government to implement, which when combined with a smaller tax base results in higher taxes. The Map predicts future extent of development to occupy 38% of the study area. Approximately 20% of the study area is currently urban or suburban development (included in this 20% are "vacant" lots and lands with roads, comprising greater than 3% of the study area). Projects proposing development within the areas mapped as development (or agriculture within agriculture mapping, etc.) will be presumed to be supportive of enhancing the sustainability of the local economy.)

Legend: Agricultural.

Goal: The Agricultural mapping consists of lands that are primarily used for large scale agricultural activities. These areas contain a mosaic of land and water types that support critically important wildlife and water resources and, therefore, warrant protection for conservation purposes. Lands that contain very high quality resources or rare natural resources should be considered for acquisition or conservation easements to preserve their condition. Proposed nonagricultural development activities should be discouraged to the maximum extent possible, for example, golf courses or ranchettes.

Criteria.

The Criteria are the same as for the Development legend with the following additions.

III. Habitat and listed species.

S. **Does the proposed project intensify the agricultural activity?**

(In developing the Map, a rebuttable assumption was made that, within agricultural areas, that limited intensification of use will occur and that there will be no changes that require additional loss of native habitat or that would alter hydrology (such as new large scale citrus operations): range and improved range land will stay the same; vegetable crops may change or the fields will be allowed to go to fallow and back again.)

Evaluation factors to be used.

Strategic Habitat Conservation Area (SHCA). **State whether any of the 1.3% of the total area of SHCA in the State is preserved as habitat within the proposed footprint of the project.**

(The Florida Game and Freshwater Fish Commission report Closing the Gaps in Florida's Wildlife Habitat Conservation System identified the minimum quantity of land that would maintain Florida's animal and plant populations at levels sustainable into the future. This document notes, for the panther, that "…habitat quality on private lands is higher than habitat quality on public lands due to sol productivity and drainage characteristics." The SHCAs included areas of low-intensity agriculture. For the Map, 1.3% of the total area of SHCA in the state is encompassed by the area mapped agricultural.)

Connectivity between major habitat areas. **State whether the change from low to high intensity activity either blocks or narrows a connection between two major habitat areas.**

(Section 4.4 reports the evaluation of the connections proposed within areas mapped as development. The evaluations concluded that wider and more numerous connections are more immune to disturbance from adjoining land uses. Low-intensity agricultural activities are considered to be low disturbance and can be utilized by wildlife as connections.)

Multi-Species Recovery Plan (MSRP). **State whether all practical measures have been taken to maintain habitat for listed species on site or, as compensatory mitigation, acquires and restores areas mapped as preservation.**

(Section 4.3 reports the assessment of how the alternative enhances implementation of the U.S. Fish and Wildlife Service's MSRP. The Map, and the criteria proper, explicitly support MSRP recommendations. For many species, the MSRP recommends encouraging management of privately owned lands.)

Florida panther on agricultural lands. **If the project proposes an intensification of agriculture or intensification to other development, state whether subsequent management will maintain habitat within its footprint, and, if habitat is not maintained, reduce the quantity of "agricultural" Priority 1 and 2 to some number less than 18% of the total priority land in the study area.**

(For the Map, 18% of the Priority 1 and Priority 2 lands are encompassed by agriculture. These areas typically adjacent to public or proposed contiguous preserves and are important components of the total habitat available to the panther. In addition, those Ensembles that proposed criteria to restrict the intensification of agriculture were considered to increase the assurance of the preservation of the species.)

Legend: Rural.

Goal. The Rural land cover legend includes lands that are used for low density residential development (e.g., ranchettes and nurseries). The area contains a mosaic of land and water types that support critically important wildlife and water resources and , therefore, warrant protection for conservation purposes, or if very high quality, for preservation status. Lands that contain very high quality resources or rare natural resources should be considered acquisition or conservation easement to preserve their condition. This area needs a mapping effort that identifies existing flow ways and forested habitats, as well as seasonal wetlands that are large or contiguous to each other, so that a strategy can be devised to protect these resources as a connected system at the landscape scale as the greater area develops.

Criteria.

The Criteria are the same as for the Development legend except, as stated in the goal statement, is lower density and preserves resources in a connected system.

Legend: Golden Gate Estates Zones 1 and 2.

Goal. Golden Gate Estates is a forested subdivision that has been drained and disturbed by canals and a road network for low density residential development (1 to 5 acre lots). Residential development is ongoing. Although the area retains wetland and wildlife resource value, Zone 1 (to the west) is more developed and drained than Zone 2. Zone 2 to the east is still relatively intact and has greater potential for restoration.

Criteria.

The Criteria are the same as for the Development legend except with the following additions recognizing that the typical application is for fill to build single family residences on single lots.

I. Wetlands.

F. **For project within Golden Gate Zone 1, does the project propose greater than 50% fill in wetlands?**

(This supplements Question #A (regarding avoidance of wetland impacts.)

Evaluation factors to be used.

Avoidance of Wetlands Impact. **State whether the acres of proposed fill is greater than 50% of the wetlands on site and, if so, state if this would contribute to a cumulative fill greater than 5.6% of the wetlands in the study area.**

(Section 4.2 estimates that, for the five Ensembles, from 5.5% to 7.0% of the wetlands in the study area will be filled. The lower percentage better satisfies the requirement for avoidance. The estimate for the Map is 5.6%. For the residential lots in Zone 1, preference is that each individual application not exceed 50% of the wetlands within the parcel. Some projects will impact more than others because of the configuration of the wetlands. It is expected that most will impact less than 50%. If a project proposes any fill, and certainly any fill greater than 50% of the wetlands on the site, consideration must be given that this may result in cumulative impact greater than 5.6%.)

G. **For project within Golden Gate Zone 2, does the project propose greater than 10% fill in wetlands?**

(This supplements Question #A regarding avoidance of wetlands impacts.)

Evaluation factors to be used.

Avoidance of Wetland Impact. **State whether the acres of proposed fill is greater than 10% of the wetlands on site and, if so, state if this would will cause a particular remnant that crosses multiple parcels to be lost and contribute to a cumulative fill greater than 5.6% of the wetlands in the study area.**

(Section 4.2 estimates that, for the five Ensembles, from 5.5% to 7.0% of the wetlands in the study area will be filled. The lower percentage better satisfies the requirement for avoidance. The estimate for the Map is 5.6%. For the residential lots in Zone 2, preference is that each individual application not exceed 10% of the wetlands within the parcel. Some projects will impact more than others because of the configuration of the wetlands. It is expected that most will impact less than 10%. If a project proposes any fill, and certainly any fill greater than 10% of the wetlands on the site, consideration must be given that this may result in cumulative impact greater than 5.6%. It is expected that this limit, when applied to adjoining parcels, will provide the preservation of the remnant wetland systems.)

H. **Has compensatory mitigation been located in Golden Gate Zone 2?**
(Preservation and restoration of wetlands in Picayune Strand is the preferred mitigation receiving area. Compensatory mitigation shall be directed to this area or areas of Golden Gate Estates adjacent to Corkscrew Marsh if mitigation bank or in-lieu fee arrangement is established.)

II. Water quality and quantity.

E. **Are entrance roads culverted?**

F. **Is fill placed to not impede sheet flow across the site?**

Legend: Lehigh Acres Urban or Lehigh Acres Greenway.

Goal: Lehigh Acres is a planned community with small lots and road and canal networks. Drainage has reduced but not eliminated the wetlands. Being elevated “tableland”, the zone contains primarily isolated seasonal wetlands.

Criteria.

The Criteria are the same as for the Development legend except with the following additions.

II. Water quality and quantity.

G. **Does the project propose regional stormwater management for Lehigh Acres?**

(Since implementation of BMPs is difficult on the size of the lots typical in Lehigh Acres, treatment of subdivision total flow is considered one method to address concerns of added pollution load. If an application is received, favorable consideration will be given to regional storm water management facilities to Caloosahatchee/Orange Rivers, water quality restoration and protect Hickey and Bedman Creek watersheds. This question recognizes that the infrastructure and lot ownership patterns have already been established.)

H. **Does the project propose regional water storage in Lehigh Acres?**

(If an application is received, favorable consideration will be given to, if appropriate, locating a regional water storage facility adjacent to the existing Harnes Marsh. This question recognizes that current drainage infrastructure results in freshwater pulse flows into the downstream waterbodies.)

IV. Other public interest factors.

E. **Does the proposed project restore wetlands within the area mapped as Lehigh Acres Greenway?**

(If an application is received, favorable consideration will be given to projects that remove roads and restore hydropatterns and connecting sheetflow to seasonal wetlands. This question recognizes that much of the original wetland and upland vegetation remain in areas of Lehigh Acres that is crisscrossed with roads and canals.)